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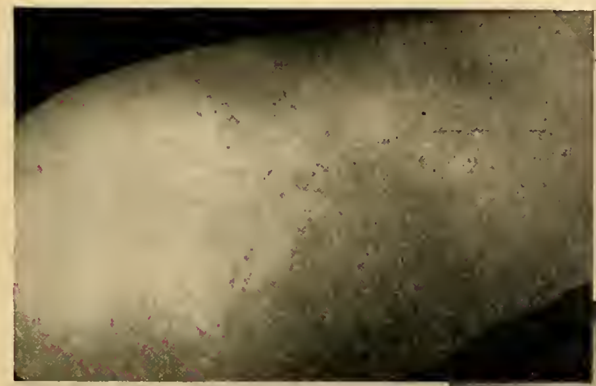
J. Buren Sidbury, M.D.

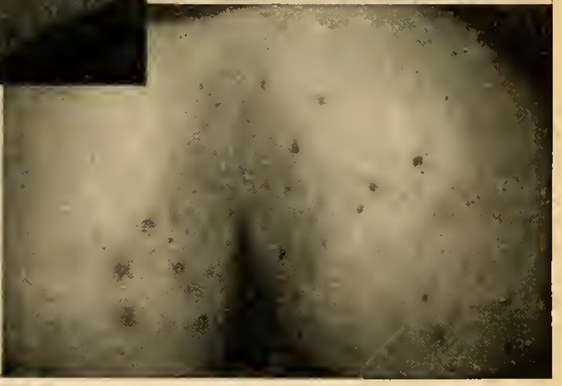
STUDIES IN THE AVITAMINOSES

This page is the first of a series on vitamin deficiencies presented by the research division of The Upjohn Company, not merely because of the profession's widespread interest in the subject, but also because of the service which these reproductions might render toward earlier recognition of vitamin deficiency states.

The Cutaneous Manifestations of Vitamin A Deficiency



Goosepimple-like papules, occasionally seen in vitamin A deficiency, occur most frequently on thighs and arms, but may appear anywhere on the skin. More common than the acneform eruption.



Acneform papules of vitamin A deficiency. Pustulation is rare, but crusts and scales may be observed. Dryness of involved skin precedes both types of lesions.

Although the classic manifestations of vitamin A deficiency are familiar to every physician, many of these represent late stages of deprivation. In some cases, cutaneous changes may provide an opportunity for earlier recognition. These cutaneous changes, when fully developed, consist of two distinct types of eruptions—a goosepimple-like papule and an acneform lesion in which pustulation rarely occurs. The absence of perspiration is due to atrophy of the sweat glands and keratinizing metaplasia of the ducts. The papular cornified lesions are due to the keratinization of the sebaceous glands and hair follicles. In some subjects, accentuation in pigmentation due to an increase in melanin and melanin-building pigments is observed. Unlike the ocular manifestations of vitamin A deficiency, the skin lesions respond slowly to specific therapy, requiring from 4 to 12 weeks for their eradication.

• •

A two-page insert, presenting full-color reproductions of vitamin A deficiency lesions, and so organized that it may be easily retained for future reference, appears in the January 20 issue of the Journal of the American Medical Association.

UPJOHN

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NORTH CAROLINA MEDICAL JOURNAL

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THE DOCTOR AND SOCIALIZED MEDICINE*

J. BUREN SIDBURY, M.D.

WILMINGTON

Today our country enjoys the highest standard of medical care in the world. It is the earnest desire of the medical profession that this high standard not only be maintained but that it be advanced. The task before the medical profession is to provide adequate medical care at a price which is fair to all the people, including those who render the service. However, I would like to emphasize the point that providing adequate medical care for all the people, including the indigent, will accomplish very little toward the solution of their social and economic problems if provision for food, shelter, and work to establish a decent standard of living is not maintained.

In his annual report for the United States Public Health Service for the year 1938 Surgeon General Thomas Parran said: "A greater advance has been made in public health in the United States during the past two years than ever before within a comparable period." In this report he states that the general death rate for the year 1937 was 10.9 per 1000 population as compared with 11.3 the preceding year. The infant mortality rate in 1937 was 54.4 per 1000 live births as compared with 57.1 for 1936. The maternal mortality rate was 4.6 per 1000 live births for 1937 as compared with 5.3 in 1936. The infant and maternal death rate is a good index to general health conditions.

During 1937 lower death rates were recorded for typhoid fever, diphtheria, malaria, scarlet fever, tuberculosis, nephritis and puerpural sepsis.

From a health standpoint 1938 was the best year in the history of our country; yet, the health reformers in our present federal administration declare "the health needs of our people can no longer be ignored." They would have it appear that the medical profession is indifferent to the medical needs of the country.

Approximately 94 per cent of all deaths from diseases 50 years ago were from acute illness, chiefly infections; today 75 per cent of all deaths occur from chronic illness. Three out of four of our deaths from disease today are caused by ten diseases. They are, in order of rate of mortality, heart disease, cancer, pneumonia and influenza, cerebral hemorrhage, nephritis, tuberculosis, diabetes, diarrhea and enteritis, appendicitis, and syphilis. All but three of these are chronic diseases. The life expectancy in 1870 was 40 years and in 1935 the life expectancy was 60 years.

In 1900 the average American citizen lost 28 days per year as the result of illness, while in 1938 he lost only 8 days.

Organized medicine is in accord with the objectives of those who advocate socialized medicine. It is their proposed method of accomplishing this objective that we most strenuously object to. Some of these objections will be discussed in this paper, and a fair appraisal of their merits attempted.

Socialized Medicine Defined

The term "State Medicine" is a rather broad and indefinite one. In order that we may more clearly understand what we are talking about and what we are objecting to in it, a definition is attempted.

In our State Society we recognize and accept a method of treating the mentally sick in our State-supported and State-regulated institutions. Our State Health Department is an institution which we respect and support by taxation. The County of New Hanover and the City of Wilmington pay to James Walker Memorial Hospital $50,000 annually of tax money to hospitalize the indigent of that county.

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*Presidential address, read before the 86th annual session of the Medical Society of the State of North Carolina, on board the Queen of Bermuda, May 10, 1939.

We point with pride to our two State-supported Tuberculosis Sanatoria, one at Sanatorium and the other at Black Mountain. We feel that there is none better anywhere. We know that our Superintendent, Dr. P. P. McCain, and his assistant, Dr. S. M. Bittinger, have no superiors and we are backing them 100 per cent. We believe that the management of tuberculosis and the control of its spread can be handled best by State-supported institutions with the assistance of private institutions. We are so sold on this idea that we are now rejoicing that eastern North Carolina is to be the site of a third such institution in our State. We are in accord with the National Health Program that more hospitals for the treatment of tuberculosis should be built.

In the field of Public Health Education the medical profession has realized for a long time the value of socialized medicine *within proper limits*. Here may I emphasize that *the field of treatment to those able to pay does not come within this province.*

Then, to what type of Socialized Medicine do we object? This can probably best be defined by quoting from the House of Delegates of the American Medical Association for the year 1922. "State Medicine is hereby defined for the purpose of this resolution to be any form of medical treatment provided, conducted, controlled, or subsidized by the federal or any State government or municipality, excepting such service as is provided by the army, navy, or Public Health Service and that which is necessary for the control of communicable diseases, the treatment of mental diseases, the treatment of the indigent sick, and such other services as may be approved by and administered under the direction of or by a local county medical society and not disapproved by the State Medical Society of which it is a component part."

Dr. Peter Irving, Secretary of the Medical Society of the State of New York says: "When the state endeavors to extend its medical activities to the treatment of self-supporting patients, threatening to accompany the doctor across the threshold of the sick-room and place the hand of the government upon the patient's pulse, then the doctor must clearly register his remonstrance."

The Interdepartmental Committee was appointed to study and co-ordinate health and welfare activities. From the result of their study we were to be advised the best method of approach to a solution of medical care for all the people. The entire personnel of this committee favored socialized medicine before they were appointed to the committee. On account of this viewpoint it was difficult for them to reach but one conclusion, that conclusion being that only the State could handle this big medical problem and that compulsory health insurance was necessary for its completion. Organized medicine strongly objects to both of these conclusions. To the first point, we contend that organized medicine is the only body equipped by training and experience to administer medical care. Second, we contend that compulsory health insurance is expensive, bureaucratic, and detrimental to good medical care. From experience gained by countries which have Compulsory Health Insurance we learn that the standard of medical practice is lowered, the free choice of physician is not maintained, and that the cost of medical care mounts high while the service to the people becomes inferior.

The Attitude of the American Medical Association

The House of Delegates of the American Medical Association in session in Chicago in September, 1938, approved all the proposals of the National Health Committee *with reservations*, except compulsory health insurance, to which it made strenuous objections. Organized medicine is in accord with the government health program in the main, and it is our duty to do all in our power to accomplish the most possible that is good in this program. Our difference arises in the modus operandi of its accomplishment. We must work in harmony to try to accomplish our aims.

First, we know that the medical profession is the only group qualified by training or experience to administer or supervise administration of medical care. The government proposes to take men with no training and no experience, except political, and have them advise the doctor how he shall treat his patient. Could we as physicians advise the lawyer, the architect, or the banker how to carry out his job? We could, but the result would be that the workman would be handicapped, and the result of his labor would be an inferior product if not a complete failure. This same type of end product will be the result of lay interference in medicine, in addition to which will be increased human suffering. Is this what we want?

Second, those who are backing this program insist that compulsory health insurance is the only method that will insure the success of this plan. If such be their conclusion, may we suggest another period of study, which, if honestly used, would show some evils of compulsory health insurance in other countries. Health plans, such as are now in use in the United States and Canada, demonstrate that the medical profession can handle this problem satisfactorily without interference of the government.

Third, our federal government is fast approaching the constitutional limit of our national debt. This proposal would impose an additional burden of 4-4½ per cent of our entire national income. There certainly does not exist an emergency of such proportions, if any emergency of any kind exists. There are other more practical, more economical, more satisfactory and more acceptable plans of handling this problem, which we advocate being tried. Progress in any line is made by trial and error. All reasonable opportunities should be given plans that are now in operation or in process of execution whereby groups of persons may receive medical care. It is imperative, however, that *all plans shall be worked out in collaboration with the medical profession.* Today there are 40 countries in the world that have State Medicine or health insurance more or less controlled by the government. There is not one of these systems which we would want in this country. Adoption of any one or part of any one of them would lower our standard of medical practice.

The American Medical Association approves the following recommendations of the National Health Association.

First, the expansion of the public health service with the provision that the funds spent shall not be used for the treatment of patients who are financially able to pay for medical care. At this point the rights of the private practitioner begin.

Second, it accepts the mandate that "the care of the indigent is the responsibility of the government", and the medical and allied professions.

Third, in the matter of expansion of hospital facilities the American Medical Association opposes this proposed expansion until a definite need is established. There are now in the United States 6,800 hospitals, of which 6,218 are registered by the American Medical Association. These hospitals report 25-35 per cent of beds unoccupied. If some plan could be worked out which would enable these unoccupied beds to be used by the indigent and paid for by Federal, State or local funds, the existing hospitals would be able to render a much greater service to the community with much less financial strain.

The existing hospitals should be encouraged to expand and increase their bed capacity before new hospitals are built. The majority of the hospitals in this country are non-profit institutions. It is easy to see that many of these worthy institutions would of necessity have to close their doors when government-run hospitals open to compete with them. The hospital load would thereby be increased. Grants, as given by the P.W.A., should be offered these institutions to help them expand to meet the needs. Such a procedure would certainly be less expensive and would impose less tax burden on the taxpayer who is ultimately paying the bill. Hospital care for the indigent and the medically indigent could well be met in these existing hospitals at a per diem rate more cheaply than could be done by building, equipping and running new government hospitals.

Dr. G. Harvey Agnew, President of the American Hospital Association, says: "American medical greatness was built and rests today primarily on private initiative, on privately supported voluntary hospitals and privately supported teaching and research associated with them.

"It is on the voluntary hospitals that our municipal and state hospitals depend for establishment of standards that pave the way to a better future. The voluntary hospital is absolutely essential to the preservation and advancement of high standards in medical practice. Those who wish to preserve the value of private initiative can do so if, like the distinguished benefactors who have gone before, they help our voluntary hospitals to meet the needs of the future. Outstanding among these is the need to bring good hospital care within the reach of those who earnestly desire to be independent rather than dependent Americans."

When the government proceeds to build hospitals little attention is paid to cost and frequently to needs in the community. An illustration of this is strikingly shown in Hot Springs, New Mexico, which has a population of 300. Here a hospital was built for the care of crippled children of New Mexico at a cost of $2,500,000 with a bed capacity of 90. On one visit to this hospital by a representative of the American Medical Association, 30 beds were occupied by children of New Mexico. Most of the occupants were Mexican children who had been sent from miles away 'for hospital care. The orthopedic surgeon in charge comes from Texas, 175 miles away, and he receives for his two visits per week to the hospital $2,000 annually more than does the Governor of New Mexico.

At Fort Worth, Texas, the government built a 300 bed hospital for narcotic addicts at a cost of $4,000,000. It is estimated that one can build and equip a good hospital for $4,000 or $5,000 per bed. This one was built at the rate of $13,000 per bed. The committee examined some 14 different sites around Fort Worth and on only one of these sites were they able to find a hill, the only hill in 200 miles. Removal of this hill was the first step in building the hospital. Since it snows only once in four or five years in Fort Worth, it was deemed necessary to connect the building with underground passages to prevent exposure going from one building to another—another economy measure.

The National Health Committee reports that there are approximately 1300 counties in the United States which have no general hospital facilities. Reports of the American College of Surgeons, the American Hospital Association and the American Medical Association show that there are only 13 counties in the United States which are more than 30 miles from a good, general hospital, or speaking in terms of automobiles and good roads, only 40 to 50 minutes, distance.

In eight of these thirteen counties the population is 5 or less per square mile. With good roads and automobiles a distance of 25 to 30 miles from a good hospital is certainly within reasonable access to good hospital care. There is no point in building a hospital where there are not enough people to support it.

The establishment of Diagnostic Clinics in these more sparsely settled communities could be done at much less expense. They would fill the major medical needs of the community by rendering valuable diagnostic aid to the country doctor. Earlier and more accurate diagnoses could be made and hospitalization in many cases could be avoided. The cost of building and operating would be many times less than a new hospital scheme and instead of competing with the existing hospitals they would render valuable assistance.

Some of the objections to State-managed medicine may be summarized as follows:

1. The cost of medical care is increased tremendously. There are frequently as many bureaucratic employees as physicians.

2. Statistics show us that mortality and morbidity rates are increased rather than decreased.

3. Periodic health examinations are not encouraged and immunization campaigns are not emphasized.

4. Emphasis on preventive medicine is not stressed and public health measures are not encouraged.

5. Overmedication, malingering and neuroses are increased.

6. The indigent are not satisfactorily cared for.

7. Post-graduate medical education is not provided for nor encouraged.

8. The hospital load is considerably increased and the practice of medicine by the hospital staff is encouraged.

9. Diagnosis and treatment in the hospital is apt to become mechanical and superficial and of a low order.

10. Medical service soon falls into the hands of the non-medical man and becomes a political issue.

11. The free choice of physician is disturbed and the injection of a third party into the patient-physician relationship is established.

The advocates of Socialized Medicine in this country say that the type of medicine practiced in this country is expensive and inefficient. In those countries of Europe which have socialized medicine there are as many bureaucratic employees as there are physicians giving medical service. Red tape, government control and political interference take so much of the physician's time that little thought and study can be devoted to the individual patient's illness. The patient ceases to be an individual and becomes a part of mass production. When one is ill one most wants to be an individual.

Those who are advocating State Medicine would have us believe that the standards of medical practice would be elevated and that quackery would be eliminated. Has this been the experience of the countries in Europe which have Socialized Medicine? Germany has had sickness insurance for 54 years. It is admitted that quacks are thriving more in Germany than in any other country in the world. Germany is the only nation which gives official recognition and endorsement to all forms of quackery. Only recently Hitler has expelled 3000 regular physicians from Germany and to take their places he has licensed quacks and faith healers.

In 1912 Lloyd George, in a hard fought political campaign, to win the election, promised complete health protection to all the people. This popular plank in his platform was the means of his election. The British Medical Association bitterly opposed it, but when the association saw that it was inevitable they accepted it and wrote into the law what good features there may be in their system today. This was done over the protest of the politicians.

Until 20 or 25 years ago it was a more or less universally accepted fact that for a doctor to receive a completed, well-rounded medical education he had to go to Europe for one or more years of post-graduate study. What has happened in the last 20 years to change this status of medical education? Has Socialized Medicine had any part to play in this change? Most assuredly it has. In this country medical research, medical education, and independent medical practice have been encouraged by private philanthropy and individual initiative. We have not been handicapped by federal regimentation. Socialized medicine in Europe has lowered medical standards there, while we, in this country, have encouraged individual initiative in medical education and research and elevated our standards and established post-graduate medical education in America. Today the Atlantic Ocean separates us from those who have chosen the path of State Medicine. Let us hope that it will continue to separate us from this monster and that we may continue to point with pride to America as being the center of post-graduate medical education.

Ontario Plan

The Ontario Plan which has been in operation now for four years is of sufficient interest to summarize here. The Province of Ontario entered into agreement with the Medical Society of that Province to provide medical care for their indigent. The plan is briefly as follows: For each person receiving relief, including dependents, (which totaled 400,000) the government agreed to pay 25 cents per month. In return the Medical Association of that Province agreed to furnish for relief-recipients medical services in the office, in the home together with obstetrical home service. Complete freedom of choice of physician prevailed.

The medical profession agreed to charge the regular fee of $2.00 per office visit and $3.00 per house visit and $25.00 for normal labor cases, plus mileage allowance. The medical profession did not expect to collect 100 per cent of these charges. Each bill was checked as to accuracy and fairness by a committee. The total bills were presented each month to the proper designated government authority. The total amount was divided into the amount of the money available for each month. Each doctor was paid according to his account rendered each month. At the end of the two years the government increased the pro rata monthly allowance to relief recipients to 35 cents per month, out of which the druggist was to receive 6 cents.

The records show that the medical profession received 45 per cent of bills rendered the first year, 38 per cent the second year, and 51 per cent the third year. From this we see that the doctors are contributing 50 per cent of the cost of medical service to this group.

After this experiment had been in operation for four years a letter was addressed to the Minister in charge of Health in this Province and his reaction to this experiment asked. His reply was: "So far as the government is concerned, the service is highly satisfactory, the medical profession appears to be doing a splendid piece of work, the relief recipients are satisfied with the care they are receiving and the taxpapers who are providing the funds (over 4 years, approximately four million dollars) are satisfied that they are getting full value for their money."

At no time was there any interference of any kind by the government in this experiment. The experiment demonstrates that the medical profession can render satisfactory medical service to the indigent with complete satisfaction to the patient, government and the doctor.

At the present time there are some 500 to 600 plans for medical care in operation in the United States under the supervision of organized medicine.

If our President, in his re-organization program, should see fit to create a portfolio of Secretary of Health, and appoint a physician to head this department, it is conceivable that the financing of this Health Program, through him and the United Public Health Service, could be accomplished with efficiency and economy. The Secretary of Health would be chairman of the National Health Program. The different states could form their committees with the State Health Officer, who holds his office by the will of the medical profession of his State, as chairman of the State Committee, and ex-officio member of the different county units. The county unit could be represented by the county medical society, local health officer, welfare officer, the mayor, and Chairman of the Board of County Commissioners. The political office-holders would have to be represented because local tax money will be necessary to match the federal funds. This committee could be empowered to employ a welfare worker who would investigate and determine the status of the indigent and would-be indigent and recommend those deserving such for certification, which certification would be for a specified time, not indefinite. This certificate would entitle the holder to call the physician of his choice and would carry the privilege of hospital and medical care by his own physician.

The fee basis is to be worked out by this local committee. The medical society membership would be on call just as they are for any other patient in the community. A plan of payment similar to the Ontario Plan is suggested as a fair and workable one. The doctors would be paid in proportion to the work done and the money allotted in that county for that period.

The medical profession has been accused of being selfish, mercenary, stagnant, and antiquated. We admit that medical ethics by which we are guided are old, but they are the only standards which have stood the test of time. Their principles are as good and as sound today as they were 2000 years ago, when Hippocrates first propounded them. What other profession gives as much of personal service and physical sacrifice as the medical profession? Each day of the year the medical profession gives in free advice and service $1,000,000 and another million at cost or below. How much are these reformers giving or willing to give to the medically indigent of this country? Most of them are after what they can get get out of their scheme, not what they can put into it.

It is incredible ever to think that a layman can measure with any degree of accuracy the value of the elements in the diagnosis and treatment of a sick patient. The only one that has ever been able accurately and impartially to render this service anywhere or at any time is the organized medical profession. When the physician ceases to have complete control as to judgment and treatment of his patient his efficiency is instantly weakened and inferior service inevitably follows.

For the past 2000 years the medical profession has held to this tradition: "That under all circumstances the best possible medical care must be supplied to the public. No matter what obstacles, legislation, pestilence, flood, famine or war may place in the way, the medical profession seeks to adapt itself to the situation and give the best service it can." When we oppose any scheme or plan which makes it difficult or impossible for the doctor to render good medical care, the best he is capable of giving, we are living up to this tradition.

The medical profession in this country has always been equal to the task imposed upon it. I still have faith that if the American Medical Association as an organization is given the opportunity of handling the task of furnishing medical care to all the people at a price they can meet, it will do a good job with satisfaction to all parties concerned if government interference is withheld.

If the federal government is honestly anxious to see that the medically indigent be given adequate medical care the profession will meet them more than half way. The American Medical Association has already indicated to the Federal Government that organized medicine was glad to consult as to plans and to co-operate as to action to accomplish the goal toward which all of us are striving, that of adequate medical care for all the people.

The existing hospitals as well as the hospitals of tomorrow must provide accommodations within the financial reach of the great majority of our people who want to be self-sustaining. There must be more semi-private rooms to meet this demand. There must be more small private rooms at low cost. It has been the experience of those hospitals fostering this plan that these low cost accommodations have a waiting list and are always in demand. More $4.00 rooms and fewer $6.00 and $8.00 rooms will meet the needs of our people much more satisfactorily. It is and will continue to be our obligation to provide adequate hospital accommodations for those people of moderate and low incomes at a price they can afford to pay.

The time has arrived when the medical profession must assert its leadership in its own household. We cannot sit quietly by and see untrained, unskilled and unscrupulous politicians assume leadership in medical affairs. We will either lead in this campaign or we will be driven as cattle to the slaughter. The demand is imperative and I have all faith that the medical profession will not be found wanting.

The public has been informed by means of the press, the radio, health agencies, and other means of communication that many illnesses can be avoided. They have been informed that by early diagnosis and good medical care many serious illnesses can be prevented. The public wants good medical care while sick but they go one step further and expect us to conserve their health by advising them how to avoid illness. The public must be informed more, and repeatedly, of the advances in preventive medical measures. We should advise the public by every known ethical source that for these measures to be most effective they must be used by the public. Knowledge is of little avail if not put into action.

The National Health Committee has presented a program for *study and action.* It is the duty of the medical profession to *study* its details. What is good and constructive we must endorse and support. The objectionable features we should try to eliminate by suggesting a better plan to which we can subscribe.

The medical profession should admit that all the people are not getting adequate medical care. The financial aid suggested by the National Health Program will be gratefully received by the profession if it would have this help "stand behind the patient, not come between the patient and the doctor." Such a method of procedure can be worked out, I feel sure, with satisfaction to all parties concerned—namely, to the public receiving the service, to the government giving financial aid, and, to the doctor who renders the service.

It is our immediate task to work out ways and means of putting into effect this vast program that is before us. We cannot shirk this responsibility which is ours. With the following ideals before us we shall set about to perform this task:

First, that the standards and quality of medical practice shall not only be maintained but advanced.

Second, that free choice of physician must be maintained as an aid to good medical care.

Third, that we should ever bear in mind that the 'poverty of the patient demands the gratuitous services of physicians.'

Fourth, that it is unprofessional for a physician to dispose of his services under conditions which make it impossible to render adequate medical service.

Fifth, that there shall be no third party in the patient-physician relationship.

I have faith that an effective plan of operation can be worked out by organized medicine, in cooperation with the federal government, by means of which the objectives outlined by the National Health Committee can be attained with satisfaction to the government, organized medicine, and the public.

From the result of these conferences and plans now in operation will come a better, a stronger and more efficient medical program. Our profession will be bigger, better and stronger than ever before and a medical care program to meet the needs of our people will have been worked out. This plan can and will be worked out by the united effort of our entire medical profession. An appeal for this unity of action and thought is my request.

LEWIS BURGIN McBRAYER AND THE STATE SANATORIUM*

Chas. H. Cocke, M.D., F.A.C.P.,
Asheville.

It was with peculiar pleasure, Mr. Chairman, ladies and gentlemen, that I accepted the invitation of your committee to give the first address in a series to be made annually in honor of the late Lewis Burgin McBrayer. I say this honor came to me with unusual pleasure, for my earliest association in the practice of medicine in North Caroline was with Dr. McBrayer. The friendship begun in his private office in Asheville in 1912, while he was a member of the State Board of Medical Examiners and I a candidate for licensure by reciprocity, grew and ripened with the years and lasted until his death. It was cemented by mutuality of interest in tuberculosis work and was kept fresh and green by frequent contacts and meetings. I am not here to recite the many admirable traits and fine characteristics of our friend, Dr. McBrayer—they are known to you all. But one faculty I cannot omit from mentioning, a zest and genius for friendship with his fellow doctors that never wavered nor waned, a personal interest in them that seemed to intensify as he broadened his spheres of activity. By implication, if not by instruction from the Committee, this paper is an attempt at factual presentation. Proper eulogies of Dr. McBrayer have been given elsewhere — notably the recent address by Dr. Paul H. Ringer at the unveiling of the memorial tablet at the Sanatorium.

Briefly, for the record, what is the story of this man? The son of Adolphus and Lou Case McBrayer, he was born in Buncombe County, N. C., December 27, 1868. A student at Judson College, Hendersonville, N. C. in 1883-86, he pursued his medical studies in Kentucky, graduating from the University of Louisville in 1889. The following year he married Miss Lillian Cordie Deaver of Asheville, N. C., of which union there were born three children: Dr. Reuben A. McBrayer, at present medical director of the Ciba Pharmaceutical Products, Inc., Summit, N. J.; Mrs. Sadie L. McCain, wife of our own Paul McCain; and Lewis B. McBrayer, Jr. Twenty-five years of practice in Asheville engaged his energies and time, during which period he served as President of the Buncombe County Medical Society; health officer of the City of Asheville (1910-1914); coroner of Buncombe County (1901-1907); member of the Board of Health, Buncombe County (1909-1914); member of the staff of the Asheville Mission Hospital; member and sometime President of the State Board of Medical Examiners (1908-14); and in 1915 President of the Medical Society of the State of North Carolina.

In 1914 Dr. McBrayer's interest in public health work and preventive medicine led him to accept the superintendency of that struggling and ill-nourished infant institution of the state, the North Carolina Sanatorium for the Treatment of Tuberculosis, located at Sanatorium, N. C., accepting also the next year the position of Managing Director of the North Carolina Tuberculosis Association. Thus he began a concrete effort at mobilizing the state for the fight against tuberculosis, of which, more later!

In 1921 he became Secretary of the State Medical Society, and editor of the Annual Transactions—positions of trust and responsibility which he discharged with energetic zeal and dispatch until only the ravages of increasing ill health caused a discontinuance of his activities in the late months of his life. So abounding a vitality as his, however active these pursuits and positions were, still left him time for interest in other national medical organizations, notably membership in the National Tuberculosis Association and its regional subdivision, the Southern Conference on Tuberculosis, of which he was president in 1925-26; in the American Public Health Association, the Tri-state Medical Association, and the Southern Medical Association, as well as

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*L. B. McBrayer Memorial Address delivered before the Medical Society of the State of North Carolina, May 18, 1939.

Fellowship in the American College of Physicians and the American Medical Association. In addition he served as editor of the Section on State Medicine in SOUTHERN MEDICINE & SURGERY in 1920.

Religious and secular affairs also claimed the time and talents of this energetic man. He was a member of the Baptist Church. He early earned a place of prominence in Lodge circles — was Grand Master Grand Lodge I. O. O. F. of North Carolina (1903-04), (grand decoration of Chivalry conferred 1904), Grand Representative from North Carolina of Sovereign Grand Lodge I.O.O.F. 1924, and Grand Marshall Sovereign Grand Lodge 1933-34. He also served as President of the Sandhill Fruit Growers Association in 1922, of the Southern Pines Chamber of Commerce in 1929-30, and of the United States Number One Highway Association in 1931. His busy life ended April 1, 1938 at the home of his daughter, Mrs. P. P. McCain, Sanatorium, N. C.

What of the fruit of these years of unremitting toil and almost ceaseless activity? It is not possible to assess the proper role of one man's activities that have joined the efforts of others seeking the same goal. It is proper, however, to indicate some of the great changes that came about partially as a result of his efforts and interest. Such a statement detracts not one whit from the fair part played by others in these endeavors; and McBrayer would have been the first to acknowledge it, for to him organized effort was part of his creed. And so without invidious reference, what happened to the State Sanatorium and the tuberculosis problem of the state during the term of McBrayer's connection and activities therewith?

First, a bit of history. It was in 1905 that Dr. J. E. Brooks of Greensboro tried to induce the General Assembly to make an appropriation for the establishment of a State Sanatorium; but it was not until the next biennial session in 1907 that with the aid of Dr. J. R. Gordon of Jamestown, then Chairman of the Appropriations Committee in the House, he secured the munificent appropriation of $15,000.00 for the purchase of a site and for the building of a sanatorium, and $5,000.00 for the maintenance of the same. I would have you contrast these figures with the present investment of $2,015,000 in the tuberculosis institution at Sanatorium, while the Western branch of the North Carolina State Sanatorium at Black Mountain, opened November 7, 1937, represents an additional outlay of $967,553.00.

Somehow, someway the infant institution was opened either late in 1908 or early in 1909 with a capacity of thirty-two patients, under the superintendency of Dr. Brooks. After two years of effort under almost insuperable difficulties, medical, political, financial and otherwise, ill health forced Dr. Brooks to retire to private practice, which he resumed in Blowing Rock. But a man of vision had begun a work that was to grow. Dr. Eugene Street succeeded to the superintendency until the middle of 1913, when the institution was closed, and Dr. Street departed. At a special session of the Legislature during the fall of 1913, the control of the Sanatorium was placed in the hands of the State Board of Health. At this special session, tuberculosis was made a reportable disease, the first forward looking step in the control of the disease; and the State Bureau of Tuberculosis was established. The State Board of Health decided to separate the business and medical departments of the Sanatorium, and Dr. Wilson Pendleton was made Medical Director, entering upon his duties in December, 1913, while Mr. Tyree Glenn was made business manager. Cutting the Gordian knot of political, medical and financial troubles that infested the about-to-be-reopened sanatorium proved more difficult and distasteful to one whose training and bent was clinical medicine than Dr. Pendleton cared to cope with, and after three months of service he resigned in February, 1914. After a creditable service in the World War, in which he served as Captain in the Medical Corps, Dr. Pendleton entered private practice in Asheville, where he has been busily engaged ever since. It was into this crisis that Dr. Paul P. McCain was summoned as Medical Director following Dr. Pendleton's resignation. Like his predecessor, before assuming the position, McCain had been assured that the institution was in fine financial fettle, whereas the truth was that it was in most deplorable financial straits. The institution was indebted to so many firms and produce concerns in the immediate section that its credit had been exhausted to the point where few purchases could be made save for cash. Picture the scene if you can. There were thirty-two patients; there were no electric lights: the accommodations were uncomfortable and inadequate, even for this small group of patients; there was no heat (in February) except from open fireplaces; the institution's credit was exhausted; and it was very difficult to discover just how much it did owe.

Dr. McBrayer came down in April, 1914 to assume his new duties as Director of the Bureau of Tuberculosis. Confronted with the chaotic financial situation in the Sanatorium and the almost hopeless task of making it a going concern, with its inadequate equipment, facilities and means of support, the State Board of Health wisely decided to make its Bureau of Tuberculosis Director also Superintendent of the Sanatorium. Still more wisely they decided to continue Dr. McCain as Chief of the Medical Service, adding to his duties and responsibilities the titles of Assistant Superintendent of the Sanatorium and Assistant Director of the Bureau of Tuberculosis. At last a fumbling Legislature had made a double play that started the tuberculosis team on its successful way as a pennant winner. So widely and favorably known to the profession of the entire state, being President of the North Carolina Medical Society, and likewise well known to so large a portion of the public of the state, Dr. McBrayer's appointment as Superintendent of the Sanatorium was the signal for the prompt re-establishment of confidence in the institution and the restoration of its credit. Brooks Hall, a new building then under construction, was completed and occupied during the same year. Dr. McBrayer assured all creditors of the institution that their accounts would be paid; and so persuasive was he in his appeals to the State Legislature that at the next meeting of the General Assembly not only was an appropriation made to discharge all the accumulated indebtedness of the Sanatorium, but an appropriation providing for seventy additional beds for the institution was also secured — quite an achievement when one remembers the pitiful inadequacy of former state aid. In 1915 Dr. McBrayer became Managing Director of the North Carolina Tuberculosis Association, which Association paid the salary of the late Dr. Joseph L. Spruill, who in 1918 became the first clinic physician. And so, with enthusiastic energy but with considered judgment under McBrayer's leadership, the activities of the State Tuberculosis Association and the facilities of the State Sanatorium expanded steadily.

Realizing the important role of nursing in the treatment of tuberculosis, though not primarily charged with the medical care of the patients, in 1915 Dr. McBrayer established a training school for nurses at the North Carolina State Sanatorium, and served continuously as its dean until his retirement in 1924. In 1923 the negro division of the institution was opened, and now has 250 beds—still sadly in need of augmentation.

In that year the General Assembly relieved the State Board of Health of the management of the Sanatorium, placing it in the hands of a special board of nine members (appointed by the Governor), of which Board Dr. T. W. M. Long was Chairman. Dr. McBrayer resigned as Superintendent of the Sanatorium in 1924.

What had the ten years of McBrayer's incumbency as Superintendent of the Sanatorium brought it? An inadequately constructed, ill-equipped, unheated, and ill-nourished building with 32 beds masquerading as a State Tuberculosis Sanatorium had grown into a 250 bed, modern, well planned, comfortable, efficiently staffed and equipped institution, whose work was becoming known wherever good tuberculosis work was done, a matter of an 800% increase in bed capacity alone. It matters little that Dr. McBrayer never did participate in the actual medical care of the patients. His was the organizing, co-ordinating, enthusiastic leadership that proved how much co-operation between the business and the medical departments of the Sanatorium made for success and enduring results, and above all proved the wisdom of placing the activities of the Sanatorium under one head.

Dr. Paul P. McCain, the present distinguished incumbent, whose work has, while adding to his fame as a phthisiologist of note, likewise reflected deserved recognition upon the institution he heads, succeeded Dr. McBrayer as Superintendent and Medical Director. The Bureau of Tuberculosis of the State Board of Health then became the

Extension Department of the Sanatorium, and McCain was naturally made Director of this. Dr. McBrayer, however, continued his activities as Managing Director of the North Carolina Tuberculosis Association, with headquarters transferred to his home in Southern Pines, until August, 1937, when failing health caused his retirement from this activity. He continued a keen and active interest in the Sanatorium and its Extension Department all through the years after his participation in its active management.

As Managing Director of the North Carolina Tuberculosis Association, he found time for a singularly energetic career. Unfortunately time forbids more than a mere mention of some of the high lights of his accomplishments in that sphere. He remained as Director until within a few months of his death; and though the Association had a board of directors and an executive committee, for all practical purposes he was solely responsible for the activities of the Association. During the earlier years the Association helped buy milk bottling equipment for the Sanatorium, and later assisted in the purchase of the first x-ray equipment. As mentioned earlier, the first Clinic physician, Dr. Spruill, was appointed in 1918, and his salary continued to be paid by the Association until 1924, when this work and the expense thereof were taken over by the Extension Department of the Sanatorium. Employment of the first state public health nurse in North Carolina, the purchase of a moving picture truck for popular instruction and the employment of a negro teacher to visit around the state showing moving pictures and lecturing on subjects pertaining to health, and the employment of both a white and colored health education worker were some of the forward looking activities begun by Dr. McBrayer. The annual double-barred-cross seal sale came up from almost nothing to the fine figure of $40,000.00 during Dr. McBrayer's service.

What was happening to the tuberculosis death rate during this decade of active service when Dr. McBrayer spent so much of his vital energies and efforts in combating disease? In 1915 the death rate from tuberculosis in North Carolina was 156.4 deaths per 100,000 population; while in the year 1924, when he left the sanatorium, it had been reduced to 99.1. These figures are a few points above those for the United States Registration Area for the same dates; but one must remember they were largely augmented by the large number of deaths in the mountain section of the state, which was then enjoying its peak prosperity as a health center by reason of the fame of the doctors then engaged in that special work there. I feel confident that a separation of the deaths legitimately belonging to the citizens of the state from those imported to these health centers would have shown a record equally as fine, if not better than those of the Registration Area. For your interest, though it may seem a bit foreign to the present discussion, this feature of the diminishing death rate from tuberculosis has reached the point where the provisional figures for 1938 would seem to indicate only 53.2, an astonishing drop of two-thirds approximately in the last quarter of a century. These figures for the state are almost identical with the last available figures for the United States Registration Area in 1937, when they stood at 53.6.

It would be profitable, but not germane to this address, to discuss the many factors contributing to this most encouraging fall in the death rate from tuberculosis. It would be foolish to attempt to give Dr. McBrayer too great credit for what is evidently the part of a general trend in this disease; and yet if time allowed I could quote you parallel figures from other communities less active in combating the disease than we have been, showing quite definitely the enormous value of the work done during Dr. McBrayer's active years, and largely under his leadership and guidance.

Of other important activities of the Sanatorium which have grown out of these earlier efforts of McBrayer and his staff much could be said with profit, but that too is another story. What concerns us most here today is that we pay honor to a man who gave up a busy, active practice in his home to attack successfully one of the major social problems of a medical nature of his time. Now why is tuberculosis a social problem? In the first place, the cure of tuberculosis involves an enormous expenditure of money, of time and of effort, and usually involves the temporary sacrifice of family, friends, ambition and business. For another reason, it attacks the young and those in their most productive periods of life. It tends to disable and to pauperize, and of course by its very expensive and prolonged time for cure lowers the entire family economic level; and so you see it is an economic problem perhaps even before it is a physical one. For cure it means separation from all business and physical activities for quite a long time. The mere physical degree of the disease will, no matter how slight to begin with, eventually become crippling and fatal if unchecked. Years ago Sir Arthur Newsholme pointed out the relation of the incidence of the disease to the living conditions of the population in which it was found; in other words, the lower the economic level and the greater the crowded conditions of living in too intimate quarters, the greater the incidence of the disease. This important factor obtains though there is a wide divergence in the distribution of tuberculosis in various age groups as well as in occupational, income and geographical groups, not to mention the matter of racial distribution. It was a realization of these facts and an appreciation also of the great truth that whatever improves the physical well being and the living conditions and the sanitary surroundings of any person or group of persons, by whatever measures of health activities undertaken, also improves the tuberculosis situation immeasurably that led Dr. McBrayer's interest into wider fields of public health activities than we have time to discuss today.

Almost the whole of the modern effort in attempting to stamp out tuberculosis has been directed along the lines of education and discovery — education of the public to make it aware of the dangers, the prevalence and the pitfalls of tuberculosis and the opportunities afforded for its early discovery, when hopes of arrest and cure are best. The distribution of pamphlets, the presentation of moving pictures, the delivery of lectures and talks—but above all the giving of opportunities for examination to masses of the public by the holding of public clinics, and the splendid work of tuberculin testing in the school and teen ages—are all parts of this campaign, which in this state, as well as in many others, has done much to help uncover and control the disease. It is axiomatic that early and less expensive recovery is almost entirely dependent upon early discovery. The measures I have mentioned followed by the Extension Department of our State Sanatorium may not necessarily all be attributed to the work of Dr. McBrayer; but they stem directly from the central body of his effort, vision and hopes. Had he continued in the superintendency of the State Sanatorium and as Director of its Extension Department, I feel sure his participation in these efforts would likewise have been crowned with the success that marked his other activities. He put his heart, his soul, his mind and the abundant energies of an active body wholeheartedly into this fight, and continued these interests as long as physical strength was given him. That he lived to see the institution which grew so splendidly from its early beginnings reach its present place of dominance* in the successful prosecution of the fight against tuberculosis must have been indeed all the recompense and satisfaction that any man could wish for. That he did this too while serving his fellow man, notably his fellow doctors, in many other valuable capacities is reason for gratitude to him on our part, and that we all pay fitting tribute to a man who was not afraid of work, who loved a problem and a difficulty because of the hope of solution, to a man who sought new pathways and felt that precedents were more to be made than followed when health was to be sought, is but his just due. While doing these things he still had time to leave the impress of his energetic, friendly personality in the hearts of all who knew him. Today we salute his memory and good works.

Ave et vale, dear old friend Mac!

*The present figures represent the facts of today. The main division of the North Carolina Sanatorium is situated on a tract of 2,100 acres, requiring the services of a farming superintendent, his assistants, a dairyman and a poultryman. Total bed capacity today is 550; but the 75 beds soon to be added to the colored unit, including 25 at the prison building, bring the total capacity to 625. The medical staff consists of the superintendent, four white assistant physicians, three colored physicians for the colored division, from one to four interns, and a dentist who divides his time with the Western Carolina Sanatorium. The nursing staff consists of eleven white and six colored graduates, including the white and colored superintendent of nurses, while the training school is composed of thirty white and twenty colored pupil nurses. Four clinic physicians conduct diagnostic clinics over the state. The Western North Carolina Sanatorium is located twelve miles east of Asheville on an undeveloped farm of 183 acres; and the present plant consists of the administration building, power house, patients' quarters, white and colored cottages, with a present capacity of 300 beds, all for white, 30 beds in one section intended for patients being used to house nurses. The nursing force consists of a superintendent of nurses, operating room supervisor, eleven graduate, four two-year graduates, and fifteen practical nurses, while the medical staff consists of the Medical Director, one resident and two assistant physicians.

PNEUMOCONIOSIS*

D. M. Brumfiel, M. D.

Saranac Lake, N. Y.

Within the past decade it is probable that no other pathological entity has received such widespread interest—one might almost say, "publicity"—as has the subject of this discussion, pneumoconiosis. Not only has it received the attention of the medical profession but it has aroused the interest of our legal brethren, of industrial management, of organized labor, of our law makers and our law courts. Even the sob-sisters have taken a turn at it. It has literally burst upon our general social consciousness in these past ten years. Probably, also, there has been no other medical subject which has been the object of such confusion of thought and about which there has been disseminated so much misinformation as this same pneumoconiosis.

Not that it is a new, or even a newly discovered, disease. Pliny recognized it and reported its existence as early as 76 A.D. But workers in heavily dusty trades were few in those days and the first attempt at description came post humously from the pen of Agricola in 1556. It remained for the machine age, however, and more particularly for modern industrialization, to enter the picture and by producing dusts in previously-unheard-of concentration cause a serious hazard to the health of workmen. A growing social consciousness plus the explosive effect of the economic depression with its unemployment focused the attention of both medical and non-medical thought upon this peculiar industrial medical problem.

The term *pneumoconiosis* has come to be ambiguous and should be discarded. It was coined to refer to a disease of the lungs due to the inhalation of stone dust. Literally, and in its most generic sense, it means "a condition in which stone dust (inorganic dust) is in the lung." In this sense we all have pneumoconiosis to a greater or less degree. Its presence is as inevitable in modern life as any other aging process—such as graying hair.

There are as many *kinds* of pneumoconiosis as there are *kinds* of *inorganic dust*, e.g. iron — siderosis, carbon — anthracosis, silica — silicosis, asbestos — asbestosis, etc. But only two known dusts have proven to be capable of causing any significant pathological change in the tissues of the lung, namely, free silica and asbestos which is a fibrous silicate. Consequently from all clinical points of view the discussion of pneumoconiosis can be limited to these two specific varieties, *silicosis* and *asbestosis*. All others are of academic interest only at present. Certain others are under suspicion but no true indictment has been rendered. Nor does it seem likely that it will be in view of past experience. Other dusts, such as granite, have been indicted in the past but in each case the substance responsible for the pulmonary pathology was found to be the free silica present, mixed with the silicate, rather than the silicate itself. Of the two, silicosis and asbestosis, silicosis is far more important because of the number of men involved.

The definition of silicosis is both an etiological and descriptive one. "Silicosis is a condition in which abnormal fibrosis occurs in the lung due to the inhalation of finely divided free silica."

The mere presence of particles of silica in the inspired air is not sufficient to produce a silicosis hazard. Many other supplementary factors enter into the etiology. The most important of these are the size of the particles, the concentration or number of the particles, the length of exposure, the influence of other coincidental dusts, and finally the individual variation of the worker in response to the dust.

As to the size of the dust particles, only those of less than 10 microns in size need receive our consideration. Larger particles are not respirable into the air cells of the lungs. With particles of less than 10 microns in size it may be said that the smaller the particle the greater its toxic effect.

Equally important with the size of the particle is the number of particles present in the air. In human evolution man was equipped with defensive mechanisms adequate to protect him from any untoward effect due to a reasonable amount of inhaled dust. Modern industrialization has upset this balance. The lower border line of safety has been arbitrarily set at 5,000,000 particles per cubic foot of air, for pure silica. Concentrations greater than that figure are presumed to be hazardous.

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*Discussion presented at the Symposium on Diseases of the Chest at Duke University, October 19, 1939.

Just as the body defenses can handle relatively small amounts of dust successfully for a lifetime, so are they able to handle large amounts for short intervals. The length of exposure is an important factor in the production of silicotic fibrosis. Even in the worst conceivable working conditions it requires two to three years before the lesions characteristic of silicosis can be demonstrated. In lesser concentrations, especially if the silica is mixed with other dusts, it may require 20-25 years of constant exposure before any pathological change can be detected.

Other dusts mixed with the silica may greatly influence the rate and degree, and somewhat the architectural character of the pulmonary fibrosis. Pure silica alone has so far proven the most productive of pathological change. In general it is a safe rule that mixtures of other dusts tend to inhibit the rate of fibrosis.

Individual variation in response to dust is a most intangible factor. It must be a very real one, however, for we have no other explanation for the fact that not all workmen exposed to the same hazard develop silicosis at the same rate or to the same degree. Many go completely unscathed.

Where do silicosis hazards occur? How widely are they distributed, and how many men are involved? There is a potential silicosis hazard in every industrial operation that releases a sufficient amount of sufficiently fine silica dust into the atmosphere. A few of the more common hazardous occupations in the recent past have been sand blasting, stone cutting, sand pulverizing, all hard rock drilling whether in mines or elsewhere, ceramics, abrasives manufacture, and foundries.

It has been estimated that, of the present generation of American workmen, approximately 500,000 have had significant exposure to silica dust. We do not know how many of these have contracted silicosis. However from the surveys made of representative industries it is safe to assume that only 1/5 to 1/4 of the total will show any silicosis whatever—a round number of perhaps 120,000. Experience in the same representative industries shows that only a minority of those showing x-ray evidence of silicosis suffer disability as a result. That leaves us a much smaller number, probably only a few thousand, potentially symptomatic silicotics. The remaining majority would have lived out their allotted span undiagnosed had not the surveys been carried out.

A brief review of the pathogenesis and pathology of this condition is indispensable to an understanding of its subclassifications, each with a characteristic x-ray pattern, and therefore to the diagnosis. As will be pointed out later the major crux in diagnosis lies in the x-ray, and an intelligent interpretation of the shadows seen depends upon an understanding of the pathological conditions which these shadows reveal.

We recall that the lung, anatomically, can be roughly likened to a tree, the trunk of which is represented by the trachea, and the individual leaves correspond to the individual air sacs, or alveolae. The entire parenchyma is abundantly supplied with lymph spaces which open into lymph channels. Those near any of the surfaces drain into the subpleural channels which course circumferentially to the hilum. All others drain toward the hilum and are intimately associated with the branches of the pulmonary vessels.

When dusty air is inhaled a considerable number of the particles are screened out by the gross mechanisms of the nasal passages, the moist trachea and larger bronchi. However, this is not adequate to remove all the particles in atmospheric suspension, and many reach the alveolae. Of those which do enter a few will adhere to the walls of the air cells. Here they are picked up by wandering phagocytes which then return to tissue spaces and start making their way into the lymph channels on a general migration toward the hilum, many actually reaching the peribronchial and tracheo-bronchial lymph nodes. Many will be trapped in the tiny aggregations of lymph tissue which lie along the course of the lymph channels. As this trapping and retention of dust-laden cells continues there will come a time when the total effect of these accumulated deposits will actually increase the diameter of the relatively radio-opaque vascular sheath. This in turn is caught on the roentgenogram as an exaggeration of the normal linear markings which represent the vascular tree. These same deposits subpleurally give the lung surface its pigmentation, particularly if the particles be carbon.

If the dusts inhaled are inert, such as gypsum, cement, marble, carbon, etc., no further development occurs. Sections of the lung merely reveal continuous little ash heaps of dust-bearing cells along the course of the perivascular lymphatics. The surrounding tissues are not stimulated to fibrosis formation and there is apparently no interference with normal pulmonary physiology. As has already been stated this condition, when sufficiently well developed, registers on the x-ray film and has been variously recorded as "perivascular infiltration", "perilymphatic infiltration", "exaggeration of the linear markings", and most unfortunately as "more fibrosis than usual".

While this last term was coined several years ago by the Miner Phthisis Medicolegal Bureau of South Africa to apply to this variation in the x-ray appearance of healthy lungs, the inclusion of the word "fibrosis" has caused no end of confusion not only in the minds of the medical men but in the courts. The word "*fibrosis*" carries the implication of tissue reaction — a definite pathological process — and we now know from microscopic studies that fibrosis is either insignificant or wholly absent. Many cases have been mistakenly labeled silicosis, and so taken to the compensation courts with nothing more than this innocuous linear exaggeration in the x-rays.

Such films are not even pathognomonic of dust deposits. Any alteration within the lung that will increase the caliber or density of the vascular sheaths will duplicate this pattern in the roentgenogram. Among such conditions are pulmonary arteriosclerosis; chronic bronchitis with peribronchitis; pulmonary congestion due to failing circulation. Of course, with chronic infections and conditions impairing the oxygenation of the tissues some fibrosis may be present.

When large amounts of silica enter the scene the picture changes. When large numbers of cells bearing silica particles come to rest in a given area they eventually stimulate the adjacent tissue to the formation of fibrosis. Each aggregate of particles acts as a focus and gradually a concentrically increasing nodule of fibrous tissue is built up about this center. Soon, pathologically, the finer lymph channels become partially occluded so that the central migration of the wandering dust cells is impeded and some of them delay in the extra vascular parenchyma long enough to become foci of fibrosis there. Hence occurs the simultaneous appearance of discreet nodules uniformly dispersed throughout the lung fields. The silicotic nodule is characteristic. It is firm, sharply outlined, without a peripheral inflammatory zone, and is composed of whorls of fibrous tissue which hyalinize. These then are the characteristic pathological lesions of silicosis—innumerable, discreet, sharply outlined nodules—which transmit their number, distribution, shape and definition to the x-ray film.

This is briefly the picture of *Simple, or Uncomplicated, Nodular Silicosis*—the classification that embraces the great majority of all cases. This is further divided into arbitrary stages—first, second, and third, depending on the size of the nodular shadows. Stage I may be roughly described as any nodulation visible on the x-ray film up to those 2 mm. in diameter, and Stage III as that stage in which the nodules have become so large that some are on the point of being contiguous. In these more advanced stages there will be seen compensatory emphysema at the lung bases and peripherally.

In contrast with the *Simple Nodular Silicosis* we have a group of cases designated as *Silicosis with Massive or Conglomerate Shadows.* The roentgenograms of these cases show a background of the characteristic nodulation with localized massive or conglomerate densities. These may be but small conglomerations of nodules still recognizable as such, but packed together in one locality and more numerous and larger than the nodules elsewhere. All gradations occur between this small localization and huge uniform opacities occupying the greater portion of both lung fields, and so dense that all architecture has been lost. These latter are accompanied by extreme basal and peripheral emphysema.

Microscopically the typical nodules are still recognizable here and there in the more massive lesions but have now become so firmly imbedded in a matrix of general fibrosis that they have become an integral part of a hard, hyalinized fibrous area. In the less compact lesions and the small areas of conglomeration the nodules dominate the microscopic picture, being merely bound together and more or less integrated by fibrous strands.

The complete etiology is not clear for all of these conglomerate and massive lesions. In Saranac Lake we agree with Dr. L. U. Gardner that the most likely explanation for their existence lies in the combined action of silicotic fibrosis and infection. It is true that in some of the more massive lesions no histologic evidence of infection can be found, but in the majority of them and in practically all of the less massive and smaller conglomerations elements of infection are discovered. This conclusion is further supported by the fact that we have observed such lesions later break down with unmistakable progressive infection when followed with serial films. In those cases where no evidence of coexistent infection occurs, we presume, rightly or wrongly, that the peculiarities of the lesion were brought about by a previous infection which had long since burnt itself out. Animal experimentation also supports this theory.

The third and last group of silicotics are those classed as *Silicosis with Infection* or *Infected Silicosis*. As the previous comments would indicate this group overlaps and embraces many, if not all, of the cases classed as *Conglomerate Silicosis*. When recognizable antemortem infection occurs, it is almost invariably tuberculosis. The background of diffuse silicotic nodules is present, as always. The roentgenographic appearance reflects the pathology within the lung. The most important criterion is the appearance of ill defined shadows in contrast to the sharply limited shadows cast by uninfected silicotic nodules. This may vary in all gradations from a small barely discernible localized smudge to a state in which an overwhelming progressive bilateral tuberculosis has completely blotted out the original pattern of nodulation. As the individual nodules themselves become the site of infection their sharp edges lose their definition and blurr off insensibly into the surrounding healthy lung pattern. In those unusual cases in which an overwhelming exogenus tuberculosis supervenes on the background of an established silicosis all the nodules appear to blossom simultaneously.

The clinical picture of silicosis can be quickly summarized. In contrast to most pathological entities, silicosis presents no pathognomonic syndrome, no characteristic symptom complex. It is true that we read of the fixed chest, the dyspnoea, the chest pain, the sputum—scanty, glassy and blood tinged, or copious and mucopurulent. Among the physical signs we are told of limited chest expansion, cyanosis, hyperresonance, prolonged and suppressed breath sounds, clubbed fingers, a various assortment of rales. But these same symptoms and signs are, individually and in groups, found to belong to other conditions and in individuals in whom no suspicion of silicosis can exist. It is the writer's firm belief that silicosis remains symptom-free until some complication develops. The possible exception to this generality is that a simple uncomplicated silicotic may become so far advanced that the accompanying emphysema may handicap him. Even that might come under the heading of complications without stretching the point too far. In those cases which do become symptomatic the onset of symptoms is so insidious that it has been stated that the first symptom is a decrease in the pay check of the piece-worker — due to his slowing down in working efficiency.

To clarify this problem in my own mind I have divided all silicotics into two groups or two stages: the first, *Preclinical or Asymptomatic Silicosis;* the second, *Clinical* or *Symptomatic Silicosis*. Again quoting the estimates given earlier there will be approximately 100,000 in the first group and a very much smaller number in the second. In this latter or symptomatic group will be: first, those extremely far advanced cases of simple silicosis with disabling emphysema; second, those with active infection; and third, a group with cardiovascular disorders in whom pulmonary fibrosis creates an additional handicap. The symptoms and signs will be those inherent in the complication, whether emphysema, pulmonary infection or an embarrassed circulation.

Silicosis can not be diagnosed from the

clinical picture. At most it can be suspected if the afore-mentioned complications occur in more than their normal frequency among a group of workmen exposed to a siliceous dust, and a thorough investigation should follow. There are two indispensable criteria in the diagnosis of silicosis, and only two. They must both be present for the same individual before such diagnosis is permissible. These are, first, a *history* of *significant exposure,* and second, an x-ray bearing the *characteristic nodular pattern* in the lung fields. One without the other is not enough. There are occasionally other conditions which simulate the x-ray pattern of silicosis so well that diagnoses of silicosis have been made in men who were never exposed. And, on the other hand, men have also received the same diagnosis simply because they worked in a siliceous dust irrespective of the fact that their lungs showed nothing in the roentgenogram. We know that many men so exposed escape unscathed.

The course of silicosis is that of extremely slow progression pathologically if the individual remains exposed to the harmful dust. The progression is to be measured in years rather than months, and in the majority of cases will not become symptomatic within an average lifetime unless complications supervene.

The progress depends on the complications. Silicosis *per se* is not a fatal disease. In considering those cases complicated by cardiovascular disorder we must remember that these men are usually in the age-group subject to the degenerative cardiovascular disease by the time they acquire their silicosis. We have seen several cases with massive conglomerate lesions who have died of congestive heart failure. By far the most important complication is tuberculosis. Were it not for tuberculosis, silicosis would be a relatively negligible condition.

Tuberculo-silicosis is a large subject by itself. Suffice it to say here that silicosis definitely predisposes to tuberculosis and that when active tuberculosis becomes established in a silicotic individual the prognosis is much more unfavorable than in the non-silicotic. Also the majority of the tuberculo-silicotic individuals pass through a long chronic period of very low toxicity before the infection becomes evident, so that the tuberculosis is very likely to become well advanced before it is suspected. Every silicotic individual with localized shadows in the lung fields should be re-x-rayed at frequent intervals in spite of his protestations of perfect health. In no other way will the early progression of his infection be detected in time for him to enjoy a normal life expectancy.

No discussion of this general topic of pneumoconiosis would be complete without further mention of asbestosis, especially here in North Carolina where many of our important American contributions to the subject have originated. While silicosis and asbestosis are both fundamentally conditions of abnormal pulmonary fibrosis, they differ widely in their pathogenesis, pathology, and clinical pictures. The particulate fibers of asbestos are too long to be taken into the alveoli of the lungs. They are picked up in the terminal bronchioles and become imbedded in the walls of these structures. Here they stimulate fibrous tissue reaction and the result is a fibrous cuff encircling the bronchiole, thickening the parenchymal wall, and partially stenosing the air passage. In far advanced cases the stenosis is sufficient to cause miliary atelectasis beyond the point of constriction and miliary emphysema of adjacent unaffected areas. All these factors contribute to an embarrassment of the respiratory and circulatory functions. Adhesive pleuritis is common and extensive pleuropericardial adhesions lead to the so-called "porcupine heart" shadow seen in the x-rays of far advanced cases. The roentgenogram bears no resemblance to that of silicosis. A general haziness or so-called "ground glass" appearance prevails, more prominently in the lower half of the lung fields, together with the aforementioned evidence of adhesive pleuritis. On close examination of the films, particularly in stereo, this ground glass appearance resolves itself into a delicate reticulum of faint shadows, produced as the natural consequence of the thickened pulmonary stroma.

This peculiar distribution of pathological fibrosis accounts for the fact that the victim develops dyspnoea comparatively early and that a considerable number of the advanced cases are reported to show right-sided cardiac enlargement and clubbed fingers. In the presence of organic heart disease of any sort the outcome is obvious. American experience does not indicate that asbestosis predisposes to tuberculosis, in contrast to the opinion in England. The clinical difference between silicosis and asbestosis is as marked as their pathological difference.

In dealing with silicosis the examiner is astonished that men who show lungs studded with silicotic nodules should refuse to admit symptoms, while with asbestosis he is equally astonished that men with so little to see in the x-ray should experience a definite physical handicap.

There are still many gaps in our knowledge of these individual pulmonary fibroses. Our first clinical impressions were derived from observations on the poor tuberculosilicotics who waited their end in our alms houses, hospitals and sanatoria. Our first knowledge of the pathology came from observations made upon the same cases after the end had come. But these were all readings made from the last chapter of the book. These studies were later supplemented by some insight into pathogenesis as discovered by the experimental pathologist in his animals. This gave us a sort of beginning to the story of which we had already seen the end. When health surveys began to be made in industry we were appalled by the number of men showing dust fibrosis and jumped to the conclusion that these thousands upon thousands were all destined to cough their lives away as had their predecessors in the alms houses. No wonder there was hysteria and panic in industrial medicine and in industry itself. Further animal experimentation, more comprehensive health surveys, longer periods of observation of men by serial x-rays and more sober consideration of the available facts have led to a revaluation of the whole problem and the hysteria is dying a natural death. Within another generation the major industries will have removed the hazards by mechanical means. But we still have the present generation of silicotics to consider. We still need to know: how rapidly nodulation progresses when once established; what is the threshold exposure beyond which silicosis will become self progressive even though further exposure is removed; what percentage of the preclinical silicotics now in existence will develop complications and become disabled; how we can diagnose the infected case earlier; how we can best treat him, and many other pertinent facts.

The experimental pathologist, the biochemist, the industrial physician and the governmental health agencies are all doing their part in attacking this problem. But there is a definite and important part that can be played by the practitioner better than by anyone else. He can do a great deal to help identify silicosis hazards and run them down in unsuspected places. He already has the confidence of the workmen and his family and can use his influence in getting x-rays and other examinations of employees in small industries and individual enterprises in which there is some suspicion of a silica hazard. Equally as important as diagnosing silicosis where it exists is the prevention of its diagnosis where it does not exist. Thus he may save mental anguish, litigation and injustices to both employer and employee.

THE VARIOUS FORMS OF ENCEPHALITIS*

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It is essential to have clearly in mind some idea of the various forms of encephalitis for purposes of both diagnosis and treatment. In the minds of most practitioners, and indeed of some neurologists, encephalitis comprises a more or less indistinct group of entities, poorly-defined pathologically and clinically. While there is some ground for this belief, the fact remains that what is known constitutes a good basis for a clinical grouping of a much confused problem. Furthermore, a knowledge of encephalitis in its various forms tends to clear the mists from the generic diagnosis "encephalitis", which more often implies ignorance of the diagnosis than a knowledge of encephalitis. It is wise to avoid the use of the term "encephalitis" as a diagnosis by exclusion, and to know exactly what form of encephalitis is meant. In this way many of the pitfalls which accompany the diagnosis may be avoided; for too often the diagnosis of encephalitis is made without any knowledge concerning the type with which one deals.

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*From the Department of Neurology, Jefferson Medical College, Philadelphia.
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It is primarily for this reason that I feel it wise to discuss a much belabored subject. My object is threefold: (1) to point out the various forms of encephalitis as a background for a working knowledge of the subject, (2) to emphasize the fact that a diagnosis of encephalitis by exclusion should be avoided, and (3) to point out that if a diagnosis of encephalitis is made, it should be made with a full knowledge of the specific type of encephalitis with which one is faced.

Classification.

There are many classifications of the encephalitides. All of them are based on neuropathological studies. Some are too inclusive, others are too exclusive.

For purposes of simplification I shall define encephalitis as a disease of the brain characterized by evidences of inflammation, the term "inflammation" being used in a broad sense. This is a definition largely from the standpoint of the neuropathologist. Clinically speaking, encephalitis is any inflammatory disease involving the brain. Such a definition would include many forms of meningo-encephalitis, such as general paresis, tuberculous meningo-encephalitis and other disorders; hence I shall confine myself to a narrower concept of the encephalitides, granting of course that in the strict sense of the word the various forms of meningo-encephalitis should be included.

For purposes of discussion the following grouping of the various forms of encephalitis seems best:

1. Polioencephalitis
2. Metastatic Encephalitis
3. Acute Demyelinizing Encephalitis
4. Chronic Demyelinizing Encephalitis
5. Perivenous Encephalitis
6. Hemorrhagic Encephalitis
7. Miscellaneous Types of Encephalitis.

This grouping includes all the important forms of encephalitis, and excludes others which are not absolutely essential to the discussion.

Polioencephalitis.

The polioencephalitic form of encephalitis is frequently referred to as the polioclastic variety or the patchy type of encephalitis. It includes a number of conditions such as poliomyelitis, epidemic encephalitis, herpes zoster, and rabies. These diseases are grouped together under the term polioencephalitis because from the pathological standpoint they have the characteristic of attacking the gray substance of the brain and spinal cord in varying degree. The classification is based on pathological characteristics; it by no means implies that all these diseases have a similar etiology.

The various diseases grouped under polioencephalitis have similar histological features; so much so that without previous knowledge of the history it is impossible from their histological features to differentiate one from the other. They differ largely in the locus of the disease process and in their mode of access to the nervous system. Poliomyelitis, for example, involves primarily the anterior horn cells of the spinal cord, but it may, and often does extend to the gray matter of the medulla, pons, midbrain, and diencephalon; or it may even involve the cerebral cortex, particularly the motor cortex. It may at times affect only the base of the brain without disease of the spinal cord. Epidemic encephalitis, on the other hand, is prone to attack the midbrain, especially the region around the aqueduct of Sylvius; it may extend into the pons and diencephalon or the basal ganglia, and it may on rare occasions involve the spinal cord. Rabies affects primarily the base of the brain, especially the medulla, but extends eventually into the spinal cord also. While the histopathology of rabies is similar to that of other members of this group, it may be distinguished definitely by the presence of Negri bodies in the diseased ganglion cells. Herpes zoster, the other of this group, involves primarily the posterior root ganglia, and the posterior horns of the spinal cord. It may, however, give rise to a typical encephalitis associated with herpes ophthalmicus involving the first division of the trigeminal nerve. Herpes encephalitis cannot be distinguished microscopically from epidemic encephalitis.

The grouping of poliomyelitis, epidemic encephalitis, rabies, and herpes zoster forms a convenient method of allying these important forms of encephalitis based on the similarity of their microscopic features. It tells us nothing concerning their etiology, and but little about their pathogenesis. In a very wide sense it is a grouping of convenience both for the pathologist and for the clinician.

While the various members of the polioencephalitis group have a similar histology, their pathogenesis differs widely. Poliomyelitis enters the nervous system through the olfactory nerve and tracts, and extends into the brain and spinal cord by way of the hypothalamus and other parts of the brain stem. Rabies invades the nervous system by means of injection through a bite. The mode of entrance of herpes zoster and epidemic encephalitis is not known. If any conclusion can be drawn concerning the histological similarity of poliomyelitis, epidemic encephalitis, herpes zoster, and rabies, it is simply that they are probably all virus diseases. The evidence is good for poliomyelitis, herpes zoster, and rabies, and is fairly conclusive for epidemic encephalitis.

It would take me too far afield to discuss even briefly the clinical features of the various members of this group, so that I must be content merely to call attention to their histological similarity in the hope that such a grouping may serve to throw some light on clinical problems.

Included in this group of encephalitides are two special forms of encephalitis known as the St. Louis type encephalitis and Japanese B encephalitis. Japanese encephalitis has been known for several years, the disease occurring in epidemic form during the hot season. The St. Louis type of encephalitis is somewhat similar clinically to the Japanese type. The clinical manifestations vary greatly, and include meningeal signs — confusion, diplopia, sleeplessness — and other evidences of brain stem involvement. The disease is caused by a virus, has a mortality of only 20 per cent, and differs etiologically from the virus of Japanese encephalitis. The two viruses are not identical. Pathologically, St. Louis encephalitis is characterized by foci of lymphocytic infiltration in the tissue, with perivascular infiltration and with much more extensive involvement of the nervous system than in lethargic encephalitis, the damage involving the cortex and other parts of the brain in addition to the brain stem.

Metastatic Encephalitis.

The group of cases included under the term metastatic encephalitis constitute a very important clinical group. They form a group of encephalitis from various causes with a similar histological picture. They are spoken of as cases of metastatic encephalitis because the encephalitis which is found in such instances is the result of foci elsewhere in the body. This form of encephalitis consists of foci which may attack any part of the brain or brain stem. They rarely involve the spinal cord. They have a predilection for the gray matter, but they may affect also the white substance to a much lesser degree. The nervous system in such cases is spattered with discrete foci which may be numerous or may be quite few in number. I have seen brains riddled with such foci, while in other instances I have had to search carefully for a few areas at the base of the brain. Histologically, the foci are composed usually of discrete collections of polynuclear cells in the gray substance, with extension of the exudate into the surrounding tissue and with peri-vascular infiltrations with polynuclear cells. There is usually no meningeal reaction unless one of the foci lies adjacent to the subarachnoid space. Essentially the process may be described as miliary abscesses. Strictly speaking it is an encephalitis. In some instances this form of encephalitis is associated not with polynuclear infiltrations, but with punctate hemorrhages.

Clinically, metastatic encephalitis may arise from cardiac disease, lung abscess, septicemias, tooth extractions and bronchiectasis. In heart disease it is most often found as a complication of subacute bacterial endocarditis, but it may occur also during the course of rheumatic endocarditis. In cases of subacute bacterial endocarditis the metastatic encephalitis is often terminal, but not necessarily fatal. Cases not infrequently recover if the extension is not too severe. The onset of cerebral symptoms in such cases is sudden and apoplectic, and may or may not be associated with fever. The signs vary with the particular area involved. Similar encephalitic manifestations occur during the course of septicemias from various causes, and here the matter is one largely of academic interest; though in these days of chemotherapy even some of these may recover.

Particularly instructive are the cases of metastatic encephalitis which develop after the extraction of abscessed teeth. Several instances of this sort have been recorded. I myself have seen and studied five. The encephalitis in such cases follows soon after tooth extraction, is sudden and abrupt in onset, associated with fever, and may produce monoplegias, focal convulsions, or other signs of cerebral damage. The encephalitis in such cases may be part of a blood stream infection, in which case the outlook is poor, or it may a focal manifestation with full recovery.

It is not uncommon to see cerebral complications accompanying lung abscess or bronchiectasis. Such complications consist usually of brain abscess, but a metastatic encephalitis is also not infrequently found. The differentiation between the two conditions is often very difficult in the acute stages. They may both give rise to focal signs, such as focal convulsions, aphasia, or hemiplegia, but the cases of metastatic encephalitis usually show no signs of increased pressure and no increase of cells in the spinal fluid. Cases of this sort which recover from their cerebral symptoms may, of course, be attributed to encephalitis rather than abscess.

Acute Demyelinizing Encephalitis.

In this group one finds largely the cases of acute encephalomyelitis disseminata and equine encephalomyelitis. This is a disorder characterized by patchy disseminated areas of tissue destruction. They may involve the brain and brain stem and the spinal cord; they may be confined to the brain and brain stem; or they may implicate the spinal cord predominantly. The areas of encephalomyelitis involve both the gray and white matter, but show a preference for the latter. Their number varies greatly; they may be numerous or few. Histologically, they are characterized by destruction of the tissue in discrete patchy areas, with loss of myelin, axis cylinders, and active phagocyte activity. The vessels both within and around the areas of destruction often show perivascular infiltration with lymphocytes and plasma cells.

Clinically, disseminated encephalomyelitis often follows upper respiratory infection, and is characterized by an abrupt onset, fever, and varied clinical signs depending on the areas involved. Paralysis of one side, of the legs, or of all the extremities, a sensory level, bladder and rectal disturbances, and cranial nerve signs may be found in varying combinations. Usually there is a leucocytosis. The spinal fluid may show an increase of cells if the patient is studied in the acute stage of the disease. The cause is unknown. The disease has been reported after influenza and the grippe. It is regarded as a virus infection, though no good evidence has been put forward to support this conception.

Recent years have revealed a new form of acute encephalitis. This is an equine encephalomyelitis which has been found to appear in man in epidemic form in the eastern and western parts of the United States. It is divided into the eastern and western forms of equine encephalomyelitis in man, because of differences which occur in the two forms. The virus of the eastern form differs serologically from that of the western type. Both types are characterized by diffuse necrotic foci with inflammatory and degenerative lesions. The clinical onset is abrupt with high fever and severe prostration, with a preponderance of polynuclear cells in the spinal fluid. The mortality in the eastern group is high (65 per cent). In 8 fatal faces a virus was isolated from the brain tissue, but the virus was not found to be the same in all instances. Five different types of virus have been recovered. A mosquito vector is said to carry the disease. A virus has been recovered from human blood serum in the western type of equine encephalomyelitis. There is also a Venezuelan and Argentinian form of equine encephalomyelitis, but so far no cases have been recorded in human beings. These forms of equine encephalomyelitis appear to be different from the American types.

Chronic Demyelinizing Encephalitis.

In this group of encephalitides may be included multiple sclerosis, encephalitis periaxialis diffusa (Schilder's disease), neuromyelitis optica (Devic's disease), and a rare form of enchephalitis, the enchephalitis concentrica of Balo.

Multiple sclerosis is well known and needs no extensive comment. In a broad sense it may be included among the encephalitides, since it has many of the features of encephalitis. It is a chronic demyelinizing disease characterized by areas of tissue destruction involving the spinal cord, brain stem, cortex, and optic nerves and tracts. It is characterized histologically by destruction of myelin in the affected areas, the relative preservation of the axis cylinders, and the formation of glial scars. The etiology is unknown. The present day conception is that the patches of multiple sclerosis result from vascular occlusions from causes unknown; the specific etiology still remains unsolved. Recent studies seem to indicate that occlusion of vessels by thrombus formation precedes the formation of the multiple sclerotic patches. Still another concept regards multiple sclerosis as being due to myelin destruction from lipase ferments in the blood stream. By some it is believed to be a spirochete infection, and by others to be a virus disease.

Encephalitis periaxialis diffusa, or Schilder's disease, is an extensive demyelinizing process characterized by the destruction of myelin with the preservation of axis cylinders. The disease involves entire lobes of the brain. Infiltration with lymphocytes in the areas of destruction as well as around the vessels is often seen. Glial scar formation develops later. The short arcuate fibres connecting adjacent cortical gyri are often preserved. The demyelinized areas involve the occipital lobes symmeterically, and may extend forward into other parts of the brain, or they may involve primarily the frontal areas. The disease occurs usually in children, is characterized by a slow, gradual onset, with blindness, often with convulsions, and with mental deficiency.

Allied to this group of encephalitides is a disorder recently described as neuromyelitis optica (Devic's disease). This disease is characterized by optic neuritis and subjective visual complaints, associated with signs of involvement in other parts of the nervous system. Many investigators regard it as a form of multiple sclerosis.

Perivenous Encephalitis.

A particularly important group is the perivenous enchephalitis, which is classified by some with the acute demyelinizing encephalitides. It is better classified as a separate group both clinically and histologically. This group of cases is characterized by diffuse small areas of encephalitis scattered throughout the brain substance, involving chiefly the white matter of the cerebral hemispheres, the internal capsules, and the white matter in the base of the brain. The cortical gray matter is involved to a lesser degree. The encephalitic areas show demyelination around the venules, with destruction of both the myelin and axis cylinders, and with perivascular infiltration consisting chiefly of glial cells.

This form of encephalitis has been found to occur following vaccination, measles, German measles, pertussis, chicken pox, small pox, and mumps. Cases following vaccinia have been few in this country, but were extremely numerous in Holland, England, and Germany a few years ago. The enchephalitis in these cases is accompanied by a secondary rise in temperature, and by varied clinical signs. There may be an onset with convulsions, with hypersomnolence and cranial nerve paralyses, (abducens or oculomotor paralyses), or with weakness of one or more limbs. The mortality in vaccinial encephalitis is high (30-40 per cent), in measles low (10-15 per cent). The encephalitic sequelae in measles are apt to be quite high, especially in some epidemics. The mortality and sequelae following chicken pox are slight. Nervous complications may occur about twelve days after vaccination, about six days after eruption in chicken pox, about three to six days after the eruption in measles, and on the third or fourth day, in German measles. The neurologic signs in encephalitis following German measles include headache, neck stiffness, attacks of unconsciousness, and mental confusion. The cell count of the spinal fluid is increased (10-200 lymphocytes).

The diagnosis of encephalitis during one of the exanthemata is not difficult, with a history of onset of neurological or mental signs at varying periods following the rash.

There is much disagreement concerning the causative agent in these cases. Some investigators believe the encephalitis is due to the agent causing the exanthem, others that a virus independent of the original causative agent is responsible, and still others that the cause is an allergy of some obscure nature. The favored hypothesis is that the encephalitis is caused by the same agent as measles, chicken pox, or the other associated exanthemata. It is not possible to say, however, that some other virus or infectious agent may not be the cause.

Hemorrhagic Encephalitis.

The group of cases spoken of as hemorrhagic encephalitis constitute an important and well-known group of cases. These cases are characterized by discrete or confluent petechial hemorrhages found scattered throughout the cerebral hemispheres, or in the brain stem. The hemorrhages may be few or numerous. They consist usually of fresh extravasations around the blood vessels and within the brain tissue, with destruction of the invaded areas. They are found in a wide variety of conditions—such as trauma, chronic alcoholism, typhus fever, malaria, rheumatic fever, influenza, hemorrhagic diatheses, arsphenamine and toxic-infectious conditions of various sorts. In alcoholism they are found especially in the roof of the midbrain, giving rise to ocular palsies and to the sydnrome known as polioencephalitis superior of Wernicke, or Wernicke's encephalitis. Recent studies tend to show that this form of hemorrhagic encephalitis is the result of a vitamin B deficiency. In trauma the hemorrhages may be few or numerous, and the same holds true for the other causes. The hemorrhagic encephalitis following arsphenamine administration usually occurs after the second or third injection. It is usually a very extensive encephalitis with much brain damage, from which recovery is incomplete. Rarely, the hemorrhage may involve the spinal cord. There is nothing characteristic of the clinical features of the hemorrhagic encephalitis occurring during toxic-infectious conditions, but the condition should be suspected whenever cerebral complications occur during fevers. Petechial hemorrhages may occur from endocarditic or pulmonary emboli.

The clinical features of the hemorrhagic encephalitides are not very well-defined and need much clarification.

Miscellaneous Types of Encephalitis.

Finally, one finds a number of cases of encephalitis which are difficult to classify. They constitute a miscellaneous group with numerous causes and many types of histological pictures.

Chief among them is a group of so-called otogenous encephalitis. These cases develop secondary to middle ear infection. The pathological picture is not clearly defined, but it has been described as a non-suppurative encephalitis, by which is probably meant a non-infectious encephalitis associated with focal inflammations. The clinical signs are those of a focal cerebral lesion, the onset being frequently with convulsions. Headache, mental confusion, and fever may be found in this syndrome. The clinical picture varies greatly, but the important feature to recall is that the process may appear in a case with middle ear infection. This type of encephalitis is of great practical importance, for the problem arises during cerebral complications in middle ear infection as to whether one is dealing with an encephalitis or with brain abscess. There is no question that cases of otogenous encephalitis occur and that they are best treated by conservative rather than by radical neurosurgical methods. They may give rise to focal cerebral signs just as does abscess, but there is no increased pressure as in the latter.

Encephalitis has been described following B. abortus infection. The brain and meninges in such cases contain miliary granulomas. It has been reported also following the injection of horse serum. Facial erysipelas has been found on a few occasions to be associated with an encephalitis characterized by large areas of demyelination in the brain. Cases of encephalitis have been recorded in gonorrhea. Pneumoconiosis has been reported with a complicating encephalitis. A non-suppurative encephalitis has been reported following labor.

Toxic enchephalitis has been reported in children, associated with acute infections such as otitis media, pneumonia, scarlet fever, and septicemia. The clinical picture in these cases showed a rapidly developing diffuse cerebral involvement, early stupor, hyperpyrexia, and death in three or four days. It is quite probable that a toxic encephalitis of this type, with vessel damage, but without evidence of inflammation may occur in adults during high fevers or severe toxemias.

Summary.

These random observations serve only to emphasize the many forms of encephalitis which may be encountered not only in neurology but in general practice. The purpose of working classifications is to clarify one's ideas so that some degree of order may develop from a confused or complicated problem. This I believe is the main purpose of such a classification as I have outlined. If it helps to insert in its proper slot some obscure case of encephalitis, and by so doing defines more specifically the diagnosis of encephalitis it has done all that can be hoped for in such a discussion.

COORDINATION OF PUBLIC HEALTH AND RELATED AGENCIES*

CARL V. REYNOLDS, M.D.,
Secretary and State Health Officer

The world today seems to be in a state of flux. There is great unrest in our religious, social and economic structure. It seems that the world has forgotten the golden rule and that this rule has been exchanged for selfish individualism, with the result that we are at one another's throats. There is good in the worst of us, and in my opinion we can capitalize on this good at a round table conference by discussing frankly our objectives and ironing out our differences. We can, through consultation, develop a wise program that will contribute to the advantage of all.

In this day of rapid communication, one can no longer live unto one's self. City, county, state and inter-state boundaries are today so closely tied that our population is one large community, and it is essential to the welfare of the whole that it be treated as such.

Since the Federal and State governments began to assume their part in supplementing county and city funds for the establishment and maintenance of public health units, and have established policies under which counties, cities and districts can participate, advancements have been most encouraging.

Since 1933, we have grown from 38 full-time county and district health organizations to 76 in 1938. Ninety per cent of our population is now being ministered to by full-time, qualified personnel through county health agencies.

I have only to remind you of the past for you to realize the great advancement we have made through governmental, state, city and county cooperation in building a health program that will accrue to the everlasting benefit of the whole people.

Our health family of 580 workers is fast becoming a recognized and essential unit of our social structure, and its influence and effectiveness is being recognized and appreciated as never before in history.

There are many problems in a community so closely allied that their interests can be best served through an interchange of ideas from experts in each field. This interchange of ideas would prevent duplication, bring about a better understanding, and enlarge the field of usefulness of all agencies.

May we consider the relationship between the public health administration and the practicing physician. The passage of the Social Security Act, the La Follette-Bulwinkle Syphilis Bill, State Aid to Counties, Funds for the Erection and Maintenance of Tuberculosis Sanatoria, the Industrial Hygiene Act, and other aiding acts—namely: "A Bill to Prevent Diphtheria in Children and to Eradicate the Disease"; "Prenatal Serological Test Law"; "An Act to Require Physical Examination Before Issuance of License to Marry"; "An Act Requiring Examination of Domestic Servants", etc.—is a recognition that the government has a definite responsibility in the prevention and cure of disease and the preservation of health.

These new responsibilities are a challenge to the ingenuity of the medical profession, and all such activities should be directed, supervised and controlled by the best qualified medical personnel available.

We are at the threshold of a new era, and we can see the dawn of a new day, if only we will seize the opportunity to guide, direct and control policies. All of us recognize that health security is of basic importance to human happiness and well-being.

After long controversial discussions as to the merits or demerits of federal participation, the House of Delegates of the American Medical Association, in special session held in Chicago, September 16, 1938, to consider the National Health Program and establish the policies of the Association with regard to it, recommended:

Expansion of public health services, as related to the control of certain infectious diseases, maternal and infant welfare, and similar projects, with the definite understanding that the need be established and that they be efficiently handled and economically controlled. The House of Delegates approved the principle of hospital insurance and the principle of cash indemnity insurance for meeting sickness costs; recognized the need for complete medical services to the indigent under local control, and for state aid in poorer communities.

In short, the House of Delegates approved certain recommendations of the interdepartmental committee but reiterated its firm opposition to any compulsory sickness insurance plan. The Association has not abandoned any of its policies for the maintenance of professional standards.

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*Read before the North Carolina Public Health Association, Greensboro, N. C., May 1, 1939.

It is further stated in an editorial in the A.M.A. Journal, September 24, 1938, that "the meeting of the House of Delegates had a most wholesome effect in allaying doubts and fears among the medical profession as to the position of the American Medical Association in relationship to recent propaganda that has been widely circulated in this country. The unanimity of expression and action again indicated that these representatives of 110,000 American physicians are able as a democratic body to express the wishes of the vast majority of the medical profession in this country and to speak with one voice for them."

We cannot accomplish anything through continued agitation. We should be democratic enough to follow the advice of the vast majority of our profession. If we could only admit this point we should set about to submit a workable plan that will retain our individuality and give the patient the right to choose his medical or surgical adviser.

This can be accomplished if the program control is placed where it should be, within the ranks of the medical profession.

I believe that we can accomplish nothing through rebellion. We must recognize and accept the truth.

To regiment medical service is to destroy its efficiency.

To preserve the present standards of medical service and promote its continued growth, we must foster individual attainment and recognize it by a compensation commensurate with its importance, at the same time realizing that selfish individualism is hazardous and that mass protection is necessary to social security.

There must be a correlation and coordination of the activities of the practicing physician and public health administrator that will best serve the whole people. In this manner, we can "make progress serve us instead of enslave us".

Education.—The physician, the dentist, the nurse, and the nutritionist have a technical knowledge and are trained therapeutists, but most of them are not trained in pedagogy. The school teacher, on the other hand, does not have the technical knowledge, but is adequately trained in pedagogy.

With this in view, there is, at this time, a plan whereby the facilities of the State Board of Health and the State Board of Education will be integrated in the development of a unified health service in the public schools of our state—by setting up jointly, as an initial step, a coordinating agency.

In this co-ordinating agency it is understood and agreed that there is to be full cooperation between the two agencies in regard to health and physical education, but that ultimate authority in instructional matters shall remain with the State Department of Public Instruction.

It is understood and agreed also that with regard to technical matters of sanitation and health services—such as clinics, physical examinations by physicians, follow-up work for the correction of defects, and immunization programs—there is to be full cooperation between the two agencies, but ultimate authority in such matters shall remain with the State Board of Health.

The plan presented in the proposal, therefore, is designed to correct defects in the organization by bringing about more effective team work between the two agencies in the formulation and execution of a school health program which will meet more adequately the needs of the people.

The importance of such a relationship can be realized when we consider the good that can be accomplished by an army of 24,000 qualified teachers instructing 900,000 children, who will in turn instruct their parents.

Welfare.—It is generally recognized that health and education are basic in establishing social and economic security. It is equally appreciated that there are allied essentials in perfecting this ideal—environment, clothing and housing. This would immediately suggest a correlation of health, education and welfare activities.

At this time, through the State Commissioner of Public Welfare, we attempting to establish a harmonious working relationship between health and welfare agencies. Statements of the duties and responsibilities of the County Superintendent of Public Welfare, and an outline of the Public Health practices and services approved by the State Board of Health were sent out for study.

This communication suggested that the Superintendent of Public Welfare and the local Health Officer discuss together any points which were not thoroughly understood at the time.

Agriculture.—Walter B. Cannon, Professor of Physiology, Harvard University, says: "In the United States the population has changed from about 60 per cent rural to 60 per cent urban since 1900". This is a significant trend for which there must be a reason. People do not leave the country because they cease to love it. They go in search of the labor-saving devices and modern conveniences which contribute to an easier and a "more abundant life".

Low birth rate in the urban population is to some extent compensated to the cities by the higher birth rate of the rural population. This condition can only be changed and improved through an interchange of ideas with state and county agricultural officials. Our object would be to have a unified agricultural program connected with other allied agencies.

We have learned that an impoverished soil means impoverished foods. If the soil lacks essential food elements, the foodstuffs grown on it may show a similar deficiency. We know that foods given in proper amounts and coming from proper sources will contain the proteins, carbohydrates, fats, minerals and vitamins necessary for the body's physical needs and for developing protective forces that will resist diseases.

Medical science is far in advance of the public's willingness to take advantage of it. There must be a reason. Ignorance and indifference both play a part; poverty plays a part. But, to my mind, ignorance of the basic essentials of our body requirements is the outstanding obstacle.

Health education is needed to combat misconceptions, misinformation, and carelessness that lead to improper selection and preparation, or to contamination of these essential foodstuffs.

These brief statements will make us realize and appreciate the great advantage that could accrue from conferences among such allied agencies.

May I suggest a plan for your careful consideration and mature judgment?

Plan.—We have our people needing medical care in one group.

We have the medical profession to administer that medical care in another group.

We must have the best available mind to direct this most important and vital element in moral, mental, physical, social and economic welfare.

To whom shall we turn for this service?

The unanimous decision would be that the medical mind is the better qualified.

This being admitted, may I present to you a Board of Directors, namely: Secretary and Chairman of the Executive Committee of the State Medical and Dental Societies; representatives from County Medical and Dental Societies; governmental representatives; State Health Officer; County Health Officers; City Health Officers; representatives from the departments of Public Welfare, Agriculture, Home Economics, and Public Instruction, from Parent-Teacher Associations, from Hospital Boards, from the Institution for the Blind, from mental hygiene groups, and from civic clubs.

By this board ways and means are to be devised to render service to its citizenry in preventive medicine, medical and surgical care, maternal and child hygiene, crippled children and care for the insane and blind.

North Carolina has 100 counties. Would it not be an advanced step to organize 100 conference committees composed of representatives from all interested agencies to study out problems and formulate plans to solve them?

Yes, we have done much, but the half has not been done! The determined public has set about to do it and they should have leadership. Organization conferences will prevent misunderstadings among those who have an honest purpose in view.

An honest discussion will bring forth a sane decision, and to my mind, it will prevent the regimentation of medical men. It will retain the individual initiative and resourcefulness, and merit will be awarded commensurate with its attainments. Qualifications will be the standard in selection and not political favor.

A democracy of allied agencies with a continuity of purpose, dedicated to service, is the answer to the world's health, educational, social, and economic problems.

RECENT STUDIES IN THE CARE OF THE LATE GESTATIONAL TOXEMIAS

Boyd Harden, M.D.

Burlington

The care of the late gestational toxemias resolves itself into a consideration of (1) those changes which occur in the maternal constitution in so-called normal pregnancy; (2) the appearance of those factors which transform an uncomplicated gestation into a pathologic state threatening the well-being, if not the life, of both mother and infant; and (3) the adjustment of the maternal constitution to meet compatibly the demands of reproduction.

The mechanisms of the profound changes which occur in the maternal constitution in so-called normal gestation are imperfectly understood. The age at which the pregnancy supervenes has an influence on the course of reproduction. The nutritional demands of the fetus, and the disposal of its waste products place increased demands on the maternal host. Normal pregnancy is associated with an increase in basal metabolism which is proportional to the combined surface area of mother and fetus. A demand for increased minute volumes, at the site of impregnation, may be satisfied in several ways: (a) Additional erythrocytes may be formed. Yet, normal pregnancy has been shown to exhibit three distinct types of anemia: the physiologic type, so-called, characterized by a progressive increase in anemia up to the third trimester when an abrupt rise in hemoglobin and erythrocytes occurs; the hypochromic, or chlorotic type, characterized by a lowering of hemoglobin and associated with hypoacidity; the macrocytic type, characterized by progressive anemia and complete post-histamine gastric anacidity. (b) The cardiac output may be augmented by an increase in the venous return to the heart, and this in turn may be influenced by an increase in the cardiac rate. Cardiac hypertrophy may participate in the mechanism of volume increase. The greater systolic delivery of blood results in greater pulse amplitude and increased pulse pressure, which must be counterbalanced by vasomotor control to prevent elevation of blood pressure. Yet, the majority of pregnant women have been shown to exhibit capillary spasm.

The chief changes in the glands of internal secretion in normal pregnancy concern those organs whose functions govern metabolic rate and the factors of growth and development. The anterior lobe of the pituitary, the thyroid, the parathyroids, the cortex of the adrenals, and the ovary present the greatest gross and microscopic evidence of increased activity.

The constitutional reserves of protein, fat, carbohydrate, inorganic salts, water, and vitamins, and the metabolic efficiency of the woman as she enters the responsibility of reproducing her kind are problems for patient and meticulous research. The response of the maternal constitution to the demands of gestation is influenced by such factors as physical habitus, malnutrition, disturbed function of the glands of internal secretion, disease of vital organs, previous acute illnesses with incomplete recovery, intercurrent infections, foci of infection, fever, and drugs.

Nitrogen reserves at the beginning of pregnancy are not the same in all women. The retention of nitrogen is out of proportion to the fetal need, the enlargement of the organs of generation, the increase in the daily needs of the maternal host, and the retention of nitrogen begin early in gestation. This positive nitrogen balance prevails in spite of lowered total plasma protein, with no evidence of retention of nitrogenous waste products in the blood and with decreased total nitrogen excretion and changes in the nitrogen partition in the urine. It is reported that one patient. in the last 21 weeks of gestation, stored 446 grams of nitrogen. After parturition and 53 days of lactation, 250 grams of nitrogen were still held in reserve.

Reports vary as to the storage of iron, sulphur, calcium and phosphorus in normal pregnancy. There is about a 5 per cent lowering of the total serum base, unexplained on the basis of fetal needs or of organic acid excess.

There is doubt about the interpretation of the blood sugar content of women in uncomplicated gestation.

Normal pregnancy is associated with a marked rise of about 30 per cent in the total lipoid content of the blood.

The moot questions in normal pregnancy have been deliberately brought into this discussion to emphasize our inability to reach a solution of a more difficult problem until we have laid the ground work for its analysis.

The premonitory symptoms and signs of convulsive seizures are outlined in any good text book of obstetrics and have been specifically summarized from a series of patients in the Elizabeth Steele Magee Hospital in Pittsburgh in a previous monograph(1). There is no point in enumerating material which is already familiar.

The purpose of this summary was to try to establish one finding, which in our experience at least, is peculiar to every patient whose pregnancy culminated in pre-eclampsia or eclampsia. We were unable to find such common denominator in a review of more than 39,000 papers, directly or indirectly related to this problem. At this stage of our study there was admitted to our wards a patient in the eighth month of gestation, with a blood pressure of 244/146, with headache, scotomata and transient blindness; tinnitus; formication and numbness of the extremities; sore throat without apparent cause; heartburn; dyspnea; precordial distress; lancinating pain in the epigastrium; nausea and vomiting; deep, dull, boring, pain in the right upper quadrant; backache; obstipation; frequency, urgency, burning and pain on micturition; excoriating leucorrhoea; a massive generalized edema; and an inordinate fear of impending death. Her red cell count was 1,800,000, and her hemoglobin was less than 20 per cent by the Haden-Hauser hemoglobinometer. Her urine boiled solid. A twenty-four hour specimen of 1285 cc. showed a quantitative protein content of 155 grams. It occurred to us that no human constitution under any condition of life could long withstand the dissipation of so vital an element as protein to so profound a degree without serious or fatal consequences.

In coming to this conclusion, we discovered one factor which, in our experience, has occurred consistently in the toxemias of pregnancy both early and late. This factor is *marked nitrogen deficit.* A regime was instituted to control this deficit. Patients were required to have at least eight hours of rest each day, foci of infection were eliminated wherever possible, elimination by bowel was secured by the use of milk of magnesia or soap suds enemata, and each patient was given a sufficient caloric intake to satisfy her basal needs plus the requirements of the infant. When a patient was unconscious, or unable to take food by mouth, intravenous glucose was given in 10 to 25 per cent concentration in sufficient quantities to approximate the individual's caloric requirements. The diets contained the basic protein requirement of the maternal host, plus the requirement of the infant, and the protein lost in the urine.

As proof that our diets supplied the basic nutritional demands for protein of the female body in pregnancy, the following evidence is presented:

Thirty-six patients with typical pre-eclampsia and 42 patients with typical eclampsia referred to the hospital for treatment were placed on these diets, which were calculated from the DuBois metabolism chart. The average caloric requirement and the average diet given to each group is presented in Chart I.

CHART I.

Pre-Eclampsia

			Average Intake in Grams		
Avg. Ht.	*Avg. Wt.*	*Avg. Age*	*Protein*	*Fat*	*Car.*
155.30 cm.	80.3 kilos	29.9 yrs.	82	61.1	218

ON THE DuBOIS CHART:

155.30 cm. meets 80.3 kilos at 1.8 square meters.

At 29.9 years of age the female requires 37 calories per square meters of surface area per hour.

1.8 square meters × 37 calories × 24 hours = 1598.4 calories as the basic caloric requirement of the mother.

DIETARY VALUES:

Protein	82 gms.	× 4 cal. per gram	= 328.00 cal.
Fat	61.1 gms.	× 9 cal. per gram	= 549.90 cal.
Carbohydrate	218.0 gms.	× 4 cal. per gram	= 872.00 cal.
Administered in diet			1749.90 cal.

Eclampsia

			Average Intake in Grams		
Avg. Ht.	*Avg. Wt.*	*Avg. Age*	*Protein*	*Fat*	*Car.*
154.1 cm.	80 kilos	26.6 yrs.	69.4	61	209

ON THE DuBOIS CHART:

154.1 cm. meets 80 kilos at 1.8 square meters

At 26.6 years of age the female requires 37.2 calories per square meter of surface area per hour.

1.8 square meters × 37.2 calories × 24 hours = 1607.04 calories as the basic caloric requirement of the mother.

DIETARY VALUES:

Protein	69.4 gms.	× 4 cal. per gram	= 277.60 cal.
Fat	61.0 gms.	× 9 cal. per gram	= 549.00 cal.
Carbohydrate	209.0 gms.	× 4 cal. per gram	= 836.00 cal.
Administered and consumed in diet			1662.60 cal.

After stabilization on the diets the fate of the protein in the diet was determined as follows:

The urinary non-protein-nitrogen was determined, this figure representing the nitrogen that was actually metabolized by the body. This multiplied by 6.25 was converted into protein. To this was added the amount of protein appearing in the urine and feces and the total of these three subtracted from the protein intake. The difference, when positive, represents stored protein, and when negative, represents a protein deficit.

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(1) Harden, Boyd: A Study in Pre-Eclampsia and Eclampsia, University of Pittsburgh Press, 1936.

Chart II gives the average results of these determinations on the two series of patients, showing in both groups a definite and considerable storage of protein.

CHART II.

Protein Metabolism

(Average of 42 eclamptic patients)

	Gms. Protein
Lost in urine	7.02
Lost in feces	17.81
Metabolized (6.25 × Urinary N.P.N.)	38.75
Total (lost and metabolized)	64.19
Given in diet	69.40
Total (lost and metabolized)	64.19
Amount stored	5.22

Protein Metabolism

(Average of 36 pre-eclamptic patients)

	Gms. Protein
Lost in urine	5.75
Lost in feces	12.75
Metabolized (6.25 × Urinary N.P.N.)	42.38
Total (lost and metabolized)	60.88
Given in diet	82.00
Total (lost and metabolized)	60.88
Amount stored	21.12

In a period of seven years, 704 patients with late gestational toxemias were admitted to our wards, no one of whom developed convulsive seizures under this regime; yet the number of eclamptic patients referred to the hospital in convulsions maintained the same incidence in the community as that previous to the adoption of this regime.

Conclusion: It would appear that protein stabilization has dealt with fundamental factors in the prevention of eclampsia.

Discussion

DR. W. L. THOMAS (Durham): Mr. Chairman and Members of the Society: It would seem that Dr. Harden is trying to show us here, not the cause of pre-eclampsia and eclampsia, but a method of preventing and treating it—that is, the protein stabilization of a patient.

We found that the dietary deficiencies and toxemias in North Carolina seem to go hand in hand. We see more patients who have pellagra from certain districts than from others. We also seem to see more toxemias from the same districts.

We have a feeling that a long-standing dietary deficiency, perhaps not of one generation but of several generations, probably accounts for the great amount of toxemia that we have.

I think Dr. Watson will be interested to know that we admit at Duke Hospital at least 40 per cent of toxemias in our total obstetric patients. We are working on it and we hope some day to be the ones to carve our name in the niche which I understand the University of Chicago has reserved for the name of the man who discovers the cause of eclampsia. It seems that here in North Carolina where we have so much toxemia one of you gentlemen will discover the cause of it.

I enjoyed Dr. Harden's paper very much. I think he has done a great deal of work, and his monograph from the Pittsburgh Hospital is outstanding. I think it was published in 1933. I wish all of you could read it.

NEW UROLOGICAL PROCEDURES OF GENERAL SURGICAL INTEREST

HAMILTON W. MCKAY, M.D.
CHARLOTTE

A few new procedures with which the urologist is familiar and which he uses daily will be discussed briefly. Certain phases of major operations and some minor procedures will be considered. New approaches to combat old complications—such as infection and hemorrhage—will be explained. No problem will be dealt with that should not be of vital interest to a mixed medical audience.

Prostatic Resection

One of the most important major urological operations discussed in recent years has been a reviving of the old punch operation. The modern and well known operation popularized as prostatic resection has been made possible by the inventive genius of many urologists, by the great improvements in the manufacturing of instruments, and by the added knowledge of the electric current used both for cutting and coagulation. No operation during my professional experience has been so enthusiastically received either by the medical profession or by the laity as has prostatic resection. It is quite natural that misinformation has been disseminated among the doctors throughout the country by the commercial instrument houses recommending and trying to sell the various prostatic resection machines, and that early advocates of this type of operation for the removal of a portion of the prostate were overenthusiastic. Often a referring doctor will send in a patient with large residual urine, severe infection, or what not, asking that we resect his prostate as casually as he would ask for a cystoscopic examination. If this is true of the medical profession—as it surely is—what must the laymen think about it? They have even been told that they do not have to be cut — the "selling surgeon" or "commercial surgeon" meaning to convey the idea to the patient that he cannot see the cut; so the patient comes to the doctor asking for a certain type of operation which he believes is nothing more than looking into the bladder and by some mystic process melting the prostate away painlessly, without discomfort afterwards and with no time spent in the hospital.

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*Read before the Second General Session of the Medical Society of the State of North Carolina, Bermuda Cruise, May 13, 1939.

What is the truth about this remarkable operation? Every urologist now realizes that prostatic resection is a highly specialized technical operation done with great danger in inexperienced hands and accompanied by many complications even in the hands of the experienced operator. No one who has done very many resections can doubt this statement. We have the same pitfalls in prostatic resection that we have in any other method of prostatic surgery—namely, infection and hemorrhage.

Have we improved in our method of dealing with infection of the prostate? Surely we have. Patients with no residual urine or with little residual urine are operated on as soon as the general physical and other necessary examinations have been done. No retention catheter is placed in the bladder, and no long period of preparation is thought necessary. In this special group neo-prontosil is a valuable drug to give both before resection and after resection in order to prevent infection or to limit infection already present.

Our methods of dealing with hemorrhage have also improved. Four procedures are worthy of note: (1) The injection of pituitrin(6) by a long needle through the resectoscope directly into the prostate gland in the large succulent prostate reduces hemorrhage during the operation, and there is no evidence that there is bleeding following operation. (2) The use of injections of theelin(6) in the preparation of patients for prostatic resection has been useful in our hands, and there appears to be less bleeding at the actual time of resection. (3) The use of the combined retention catheter and Foley bag(1), or what is now known as the Foley hemostatic bag, has been a godsend to us in our prastatic work. (4) The irrigation(6) with 20 per cent Karo syrup through the Foley hemostatic bag is of unquestionable value in the cases that are inclined to bleed slowly or to ooze. This form of irrigation prevents or limits the formation of clots in the bladder.

Urinary Infections

In the not far distant past we were accustomed to treating pyuria without concerning ourselves with the organism which was the etiological factor. In the last two or three years our whole conception of treating urinary infections has completely changed. The very first thing we want to know is the offending organism; then we prescribe the drug or diet—or both—which will either inhibit the growth of this particular organism or render the urine sterile. Of the new methods of treating urinary infections, the ketogenic diet, mandelic acid, sulfanilamide, sulfapyridine, and neo-arsphenamine have done more to put the treatment of urinary infection on a scientific basis than all the former theories and treatments combined.

A great many of the severe infections of the kidney are due to the staphylococcus, and this organism is of great importance in stone formation and the growth of stones. Especially is this true in recurrence of calculi post-operatively. Some of the new drugs act favorably on some strains of cocci, but the coccal infections still present the outstanding problem and the one which we hope will continue to be worthy of the best research.

Intravenous Urography

This procedure is one of the most valuable single aids which have been discovered in recent years. It is a lamentable fact that few urologists, and still fewer roentgenologists and other physicians who have x-rays take advantage of this valuable diagnostic procedure. They do not seem to appreciate the great importance of the preparation of the patient. Lack of preparation of the patient means the useless injection of an expensive drug and the added cost and waste

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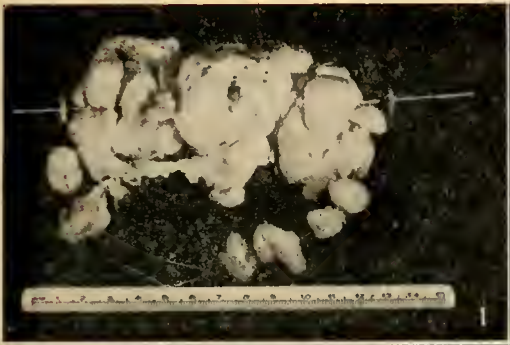
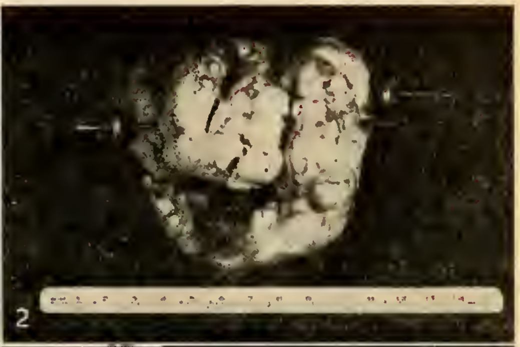
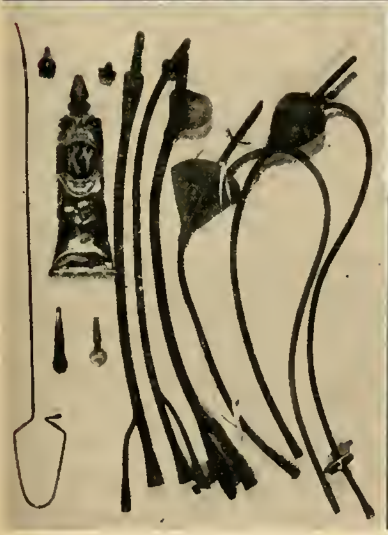
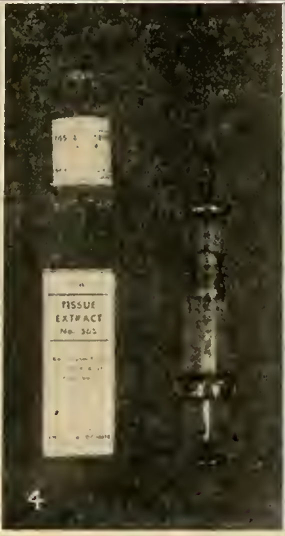
6. ———: Letters of the Urologists Letter Club of the United States, Vol. I and II, 1938 and 1939, Burgess Publishing Company.

1. Foley, Frederick: Hemostatic Bag Catheter, J. of Urol. 38:134, 1937.









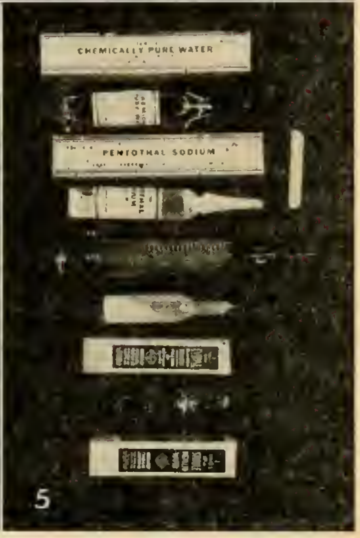


Figure I: Adenomatous hypertrophy (grade IV) Numerous spheroidal bodies resembling bunch of grapes. Best removed by open operation.

Figure II: Adenomatous hypertrophy (grade IV) 150 grams. Best results obtained by prostatectomy not resection.

Figure III: Recent devices for control of post-operative hemorrhage in prostatic surgery. Brake bag. Various sizes of Foley's hemostatic bag.

Figure IV: Tissue extract with syringe to forcibly illustrate its practical use in many forms of kidney colic and ureteral spasm.

Figure V: Intravenous anesthestics well adapted to minor urological surgery in office or hospital practice.

of one or more x-ray films. As a functional kidney test, intravenous urography probably tells us more in a graphic way than any common "work test".

New Methods of Treating Hydrocele

The recent injection methods to obliterate the hydrocele sac advocated by Dr. George Livermore(2), and the injection of quinine hydrochloride and urethane advocated by Louis Baretz(3) are of great importance to all urologists and surgeons.

Interstitial Cystitis (Hunner's Ulcer)

Interstitial cystitis probably produces the most distressing symptoms and acute and chronic suffering of any disease of the bladder. Certainly our knowledge of both palliative and curative methods at the present time is very much limited, and any drug or procedure which will give the patient comfort is worthy of a trial. Used purely on an empirical basis, neo-arsphenamine, given in Gm. .3 or Gm. .4, six to ten doses, has oc-

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2. Livermore, George: Livermore Method for Relief of Hydrocele, J. of Urol. 39:418, (April) 1938.
3. Baretz, Louis: Cure of Hydrocele by Injection, N. Y. J. Med., 38:489-493, (April) 1938.

casionally produced noteworthy results. The use of alcresta ipecac (Lilly), giving six to ten tablets at bedtime, has produced an occasional brilliant result. We are at the present time treating two patients with these drugs and have noted great improvements.

Intravenous Anesthesia

Surely the urologist, of all specialists, should be most interested in anesthesia. In the intravenous injection of pentothal sodium he has an anesthetic which is easy to administer, is practically without danger if carefully administered, and which should prove a boon to the urologist and a blessing to his nervous and apprehensive patients. One cc. of this drug puts the patient to sleep in ten seconds, and he awakens promptly without ill effect.

Tissue Extract No. 568 (S&D) (4)

From the beginning urologists have been trying to find a drug which will relax the ureter and produce no untoward effects. The injection of 2 cc. to 4 cc. of the residual solution after insulin has been precipitated has proven very valuable in our hands. In cases where we deside to remove a ureteral stone in the lower third of the ureter by operative cystoscopy, in facilitating the passage of instruments when spasm exists, and in the dilatation of strictures, we have found this drug very valuable.

Post-Operative Routine (Calculous Disease)

Every urologist looks forward to the day when he can with certainty remove a calculus or calculi from any portion of the urinary tract and assure the patient that he will not have recurrence. It is both embarrassing and distressing to the urological surgeon to remove a stone from the kidney, ureter, or bladder, and have the patient return, sometimes in an unbelievably short time, with another stone. The past few years have added much to our knowledge of preventing stone formation by the eradication of focal infection, the elimination of stasis, the correction of metabolic errors, and the correction of vitamin deficiency. The taking of plain radiograms and intravenous urograms before the patient is dismissed from the hospital is now considered necessary. That dietary adjustment is absolutely essential in the plan of preventing re-formation of stones is now accepted. The following facts should be noted: (1) Change of P^H by diet depends on (a) analysis of the stone; (b) P^H of urine from the diseased kidney. (2) No single diet can be applied to all patients; individual adjustment is of great value. (3) If the calculus is composed of uric acid or cystin, the food should be purine free. (4) If the calculus is composed of oxalates, foods rich in oxalates should be restricted. (5) Operative removal of stone is but one phase in the management of this disease.

Renal Mobility

Dr. Elmer Hess(5) of Erie, Pa., has emphasized mobility of the kidney and has stressed the importance of establishing a normal position and normal movements of the kidney to compare with abnormal positions and movements as an aid to diagnosis in difficult conditions—as, for example, perirenal abscess and sub-diaphragmatic abscess. When an understanding of the normal and abnormal mobility of the kidney in health and disease has been reached, many difficult problems of a clinical nature will be more easily solved.

4. Carroll & Zingale: Effect of Pancreatic Tissue Extract on the Ureters, S.M.J. 3:233-236, (March) 1938.

5. Hess, Elmer: Renal Mobility, J.A.M.A. 110: 1818-1823, (May 28) 1938.

CLINICAL EXPERIENCE WITH SULFAPYRIDINE*

W. A. MacCOLL
DURHAM

One year ago this month sulfapyridine made its appearance. Since this time it has established itself as a near-specific in the treatment of pneumonia, and as a valuable drug in certain other types of infections. For the past six months the drug has been under observation at Duke Hospital, and the present report is a presentation of our experience, together with the results which others have obtained elsewhere.†

Sulfapyridine is dispensed in 0.5 gram tablets or in powder form, and is administered orally. The drug itself is soluble only one part in one thousand, which renders it impractical for intravenous or subcutaneous use; the soluble sodium salt which recently made its appearance has not yet received sufficient trial for evaluation. (Recent reports from Johns Hopkins Hospital are quite favorable. Ed.) Sulfapyridine is absorbed rather readily from the intestinal tract, reaching an effective level in the blood stream within five to six hours. It is conjugated in the body in about the same proportion as sulfanilamide, and excreted through the urine.

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*From the Department of Pediatrics, Duke University School of Medicine and Duke Hospital. Read before the Bermuda meeting of the Medical Society of the State of North Carolina May 10, 1939.

†The sulfapyridine has been generously supplied by Merck and Company of Rahway, New Jersey and the Calco Company of Bound Brook, New Jersey.

Dosage of the drug has not been standardized, owing, perhaps, to variation in absorption and excretion. Many schema have been drawn up, but the necessary modifications in these to meet individual demands have rendered them of little value except as basic schedules to be varied according to such factors as degree of illness, tolerance to the drug, therapeutic response, or the appearance of complications. Our basic schedule has been as follows:

Under 1 year of age	1 gram daily
1-2 years of age	2-3 grams daily
Over 3 years age	3-5 grams daily

given in divided doses at four or six hour intervals. Both a large and a small initial dose have been tried. We have noticed little difference in the effect, although others feel that the large initial does (one half the calculated daily amount) is warranted in order to assure a high initial blood level, and to prevent the development of tolerance to the drug on the part of the bacteria.

The drug has established itself most firmly as an agent for the treatment of pneumonia due to the pneumococcus. Evans and Gaisford(1) report a reduction of mortality in adults from 27 per cent to 8 per cent when the drug was used; Agranat and others(2) from 10 per cent to 3.7 per cent. Graham(3) and his associates had 23 per cent mortality in a control series, 12 per cent in a serum treated group, and 6 per cent in cases treated with sulfapyridine. Anderson and Dowdeswell(4) report a 75 per cent reduction of mortality with a marked reduction in the length of the illness when the drug was administered. Flippin et alii(5) showed a mortality of 4 per cent. Favorable reports of its use in children have come from St. Louis,(6) Cincinnati,(7) Baltimore,(8) and Durham, (9) leaving little doubt as to the efficacy of the drug in pneumococcic pneumonias.

Since October, 1938, all patients admitted to the Pediatric Service at Duke Hospital with a diagnosis of pneumonia have been treated with sulfapyridine. X-rays were taken on admission, and cultures obtained from the nasopharynx. The drug was then given in the dosage as discussed above. Fluids were administered freely, and the diet was given as tolerated. In the matter of duration of treatment our procedure has differed somewhat from that used by certain others. Some have given massive doses for forty-eight hours, then stopped altogether; others have graduated dosage down from the first to the fourth day; again the drug has been continued for forty-eight hours after the temperature has reached normal. But there is at present no more satisfactory criterion for the withdrawal of the drug than the total white blood cell and the differential counts, which we have found of invaluable prognostic aid. Experience has shown us that if treatment is discontinued while there is still hematologic evidence of infection—i. e., elevated white cell count or toxic shift in the hemogram — recurrences or relapse may occur. This relapse usually responds promptly to the reinstitution of therapy. Clinical improvement precedes hematologic improvement, and the state of the process in the lung is more precisely reflected on the

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1. Evans, G. M. and Gaisford, W. F.: Treatment of Pneumonia with 2-(p-aminobenzenesulphonamido) pyridine. Lacet 2: 14, July 2, 1938.
2. Agranat, A. L., Dreosti, A. O. and Ordman, D.: Treatment of Pneumonia with 2-(p-amino benzene sulphonamido) pyridine (M & B 693). Lancet 1: 309, February 11, 1939 and Lacet 1: 380, February 18, 1939.
3. Graham, D., Warner, W. P., Dauphinee, J. A. and Dickson, R. C.: The Treatment of Pneumococcus Pneumonia with Dagenan, M & B 693, Can. M.A.J. 40: 325, 1939.
4. Anderson, T. F. and Dowdeswell, R. M. Treatment of Pneumonia with M & B 693. Lancet 1, 252, February 4, 1939.
5. Flippin, H. F., Lockwood, J. S., Pepper, D. S. and Schwartze: The Treatment of Pneumococcic Pneumonia with Sulfapyridine. J. A. M. A. 112: 529, February 11, 1939.
6. Barnett, H. L., Hartman, A. F., Perley, A. M. and Ruhoff, M. B.: The Treatment of Pneumococcic Infections in Infants and Children with Sulfapyridine. J.A.M.A. 112: 518, February 11, 1939.
7. Wilson, A. T., Spreen, A. H., Cooper, M. L., Stevenson, F. C., Cullen, G. E., Mitchell, A. G.: Sulfapyridine in the Treatment of Pneumonias. J.A.M.A. 112: 1435, April 15 1939.
8. Hodes, H. L., Stifler, W. C., Walker, E., McCarty, M. and Shirley, R. G.: The Use of Sulfapyridine in Primary Pneumococcic Pneumonia and in Pneumonococcic Pneumonia associated with Measles. J. Ped. 14: 417, 1939.
9. MacColl, W. A.: Clinical Experience with Sulfapyridine. J. Ped. 14: 277, 1939.

laboratory sheet than on the temperature chart.

In the group studied, temperatures on admission varied from 102° to 106°F., but began to fall within twelve hours after treatment was begun, and in over half the cases reached normal values in twenty-four hours. The fall in temperature was accompanied by relief from anorexia and toxicity. This apparently represents a rapid lysis rather than the usual crisis of lobar pneumonia. Improvement was continuous, except for an occasional relapse of temporary nature as discussed above. The blood picture and x-ray film corroborated the clinical impression of improvement.

The results of treatment as outlined above have been very satisfying. Fifty-eight children with pneumonia proven by x-ray have received the drug. The differentiation between lobar- and bronchopneumonia was made by x-ray and by the clinical aspects of the disease. It would be impossible to separate the two groups on the basis of reaction to treatment, for it was much the same in both. Table I gives the distribution of the patients by age.

TABLE I

	Bronchopneumonia			**Lobar Pneumonia**					
Age Years	Number Patients	Per Cent	Number Deaths	Number Patients	Per Cent	Number Deaths	Total Patients	Per Cent	Total Deaths
0-1	14	43	4	7	28	1	21	36.0	5
1-2	8	23	0	5	20	0	13	22.5	0
2-5	5	15	0	6	24	0	11	19.0	0
5-11	6	19	0	7	28	0	13	22.5	0

Of the cases listed as bronchopneumonia, the predominant organism from the nasopharynx was in 8 instances the Beta hemolytic streptococcus, in 8 the hemolytic streptococcus, and in 17 the two were found together. Pneumococci were isolated from 17 of the 25 cases of lobar pneumonia, but not all of these could be typed, since some were cultured after sulfapyridine therapy had been started, and it is well known that after the drug has been given the capsule of the organism loses its ability to react to specific sera. Types II, IV, VIII and XI were identified.

The average length of illness before entering the hospital was 3.1 days in lobar pneumonia and 4.4 days in bronchopneumonia. The duration of treatment was 4.8 days in both groups. In the average of all cases the temperature was normal in thirty-eight hours, and no complications (empyema, etc.) developed. As shown on Table I, only one patient with lobar pneumonia and four with bronchopneumonia died. All of these were under nine months of age; two had been premature infants; one expired probably as the result of a transfusion reaction. None of these five patients showed any beneficial reaction toward any form of treatment given.

The concentration of the drug in the blood varied from 1.1 to 15.2 mg. per cent in the total group of subjects, with a majority between 3 and 5 mg. per cent. This is apparently an effective level. Marshall's method for sulfanilamide determination was used, with sulfapyridine substituted in the standard solution.

Five cases of pneumococcal empyema have also been treated with sulfapyridine. In all cases the fluid was sterilized by the third day, but in no case did the condition clear without drainage. One patient, a six months old boy, who had been ill with empyema for eight weeks, died after 60 hours of treatment; and in one other case of empyema the fluid was sterilized, but the patient continued to run an elevation until drainage had removed the purulent material. In empyema it is our impression that the drug is of value in early stages to prevent massive spread of the process, and in later stages as an adjunct to drainage either by thoracotomy, aspiration or rib resection. The drug is found in empyema fluid in approximately the same concentration as in the blood at the same time.

One case of mediastinitis, three acute upper respiratory conditions, one case of peritonitis, and one persistent bacteremia (all of pneumococcal etiology) have responded well to sulfapyridine. Types I, II, IX, X, XXI, and XXIII have been encountered in these last two groups.

In other types of illness the value of sulfapyridine has not been so well established. With this in mind an attempt has been made to define the limits of usefulness of the drug. The following paragraphs represent the information obtained from a group of 50 patients suffering from a variety of complaints.

Fifteen children had upper respiratory infections with severe enough reactions to warrant hospitalization, five of them being complicated by suppurative otitis media. These were all treated on the same principles as those outlined above, with good results. One patient died, a nine months old child had had diarrhea for one week and was moribund on admission. The others showed remarkably rapid improvement, all symptoms subsiding within two days. About half of these cases were caused by the Beta hemolytic streptococcus, and the remainder yielded hemolytic staphylococci or mixed organisms on culture. Those with streptococcal infections responded a little more rapidly than those with other organisms. We have had few acute streptococcal infections, and very little has appeared in print in regard to the treatment of the streptococcal diseases.. Experimentally the drug is said to be as effective as sulfanilamide. Conclusions in this regard must await further trial.

No information on a large group of cases infected with the hemolytic staphylococcus aureus has come to our attention, although several isolated reports have appeared. Bliss and Long(10) report that sulfapyridine is more effective than sulfanilamide in experimental staphyloccoccal infections in mice. Our series is small, but certain impressions have been gathered which seem to be worth reporting. In conditions in which the staphylococci are on the skin, tonsils, or "outside" the body, sufficient help can be had from the drug alone to overcome the infection. When the organism invades the deeper tissues, the blood stream, or the central nervous system, the drug appears to do little more than hold the infection in check and, unless the antibody response by the patient is immediate, the drug proves inadequate. One patient with staphylococcus bacteremia showed only slight improvement during six days of sulfapyridine therapy, but was well two days after 20,000 units of staphylococcal antitoxin had been administered. Similarly a patient with chronic low grade pneumonitis, who persistently yielded staphylococci on throat culture after six weeks of sulfapyridine, cleared completely when staphylococcus toxoid was given also. On the other hand some of our cases of staphylococcal septicemia have died in spite of a combination of all therapeutic measures at our disposal. Nevertheless, in these severe infections, sulfapyridine in conjunction with serotherapy appears to offer more hope of cure than any other measure we have possessed heretofore.

Many papers have appeared in the English journals concerning results obtained in the treatment of acute gonococcal infections. The latest of these,(11) gives a summary of the work which has gone before, and reports a 93 per cent cure in 97 patients with gonorrhea. Our experience has been neither so vast nor so encouraging. Three cases of vaginitis have responded remarkably well, but in a case of opthalmia a staphyloma developed and the eye was lost.

We have treated four cases of meningitis, with one death. This patient had symptoms of a brain abscess. The other three were caused by M. catarralis, meningococcus, and staphylococcus. All responded well, and within three days all symptoms of disease had disappeared. Seven cases of pneumococcus meningitis have been reported as having recovered.(12),(6). It is interesting that only about 40-60 per cent of the drug permeates the spinal canal, suggesting that a heavier dosage may be indicated in meningitis.

With regard to the toxicity of sulfapyridine, early reports were apparently overoptimistic. It was originally stated that only one-fourth the toxicity of sulfanilamide was to be expected, but recently numerous reports have shown it to have all the toxic effects of sulfanilamide. This is not too startling, inasmuch as sulfapyridine contains the entire sulfanilamide radical. Acute hemolytic anemia, agranulocytosis, mental effects, vomiting, cyanosis, hematuria, photo-

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10. Bliss, E. A. and Long, P. H.: Comparative Therapeutic Effect of Sulfapyridine in Experimental Staphylococcus Aureus Infections in Mice. Proc. Soc. Exp. Biol. and Med. 40: 32, 1939.
11. Bowie, F. J., Anderson, T. E., Dawson, A., and MacKay, J. F. Treatment of Gonorrhea by B & B 693. Lancet 1: 711, April 8, 1939.
12. McAlpine, D. and Thomas, G. C.: Pneumococcic Meningitis Treated with M & B 693, Lancet 1: 1754, April 1, 1939.

sensitization of the skin, and fever have all been recorded. The most troublesome of these has been vomiting, and enteric coated tablets and other measures are being tried to obviate this difficulty. Vomiting has occurred with a frequency of about 25 per cent, but has seldom been severe enough to interfere with therapy. Acute anemia and agranulocytosis do not progress after the drug is discontinued, and no fatal case has been recorded as yet. Several workers(13) have found crystals of the drug in the kidneys and ureters of animals who developed hematuria during treatment. Crystals have also been noted in the urine of patients developing hematuria. Thus, for general use, the same precautions as those used with sulfanilamide must be employed.

Perhaps it should be emphasized here that all low white cell counts do not mean agranulocytosis. We have observed several cases in which the count fell to values of 2500 to 3000. In all of these there were still 50 per cent or more granulocytes. The interpretation apparently is that the marrow has been working overtime to meet the demands of the body while the infection has been progressing, as evidenced by the appearance in the blood of large numbers of immature cell forms. When the infection has been overcome by the action of the drug plus the immunizing response of the body, the demand for white cells falls, the marrow stops putting out immature forms and, as it were, catches up on production; for, when the count rises again, the mature forms are back to their normal proportion. Thus the explanation for the low count would be the destruction of the immature forms in the circulating blood, and the temporary lack of production on the part of the marrow.

Numerous clinicians have suggested that the drug has an antipyretic action similar to the salicylates. That this is not the case is suggested by the following observations: (1) Sterile fever induced in rabbits failed to respond to administration of the drug; (2) a case of acute rheumatic fever failed to show any lowering of temperature, but responded promptly to salicylates; (3) a microcephalic who ran an irregular high fever did not respond to the drug; (4) the temperature and white blood cell curves parallel each other so closely that one cannot escape the fact that the lowering of temperature is due to diminution of the amount of infection.

Summary

Observations obtained from six months' clinical experience with sulfapyridine are presented with such reports from the literature as have bearing on the use of the drug and its effect on disease. Our dosage and method of treatment have been outlined.

Sulfapyridine appears to have established itself not only as an effective chemotherapeutic agent for the management of pneumococcal infections but of bronchopneumonia as well, bringing about marked improvement within thirty-six hours despite the duration of the disease prior to treatment. The white blood cell count is the most reliable index of the state of the patient.

Severe upper respiratory infections have responded well to sulfapyridine therapy.

Staphylococcal infections in general are controlled by sulfapyridine, and streptococcal diseases are probably susceptible to its effect. The former will respond better to a combination of chemo- and serotherapy than to either alone.

Infections by Neisserian organisms respond well to sulfapyridine.

All the major toxic effects of sulfanilamide have already been recorded in sulfapyridine therapy.

It is our belief that the drug does not have an antipyretic effect.

The Future of Medicine.—We need have no fears that the development of medicine is at an end. Even though the world be troubled, we may confidently look for peace and satisfaction in the field of medicine, a field which is only at the beginning of possibilities of service and benefit to mankind. That medicine will continue as a profession in the hands of men possessed of individual initiative and of professional ideals, we likewise need have no doubt.—Winfred Overholser: The Broadening Horizons of Medicine, Science, 90:2338 (Oct. 20) 1939.

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13. Antopol, W. and Robinson, H.: Urolithiasis and Renal Pathology After Oral Administration of 2 (Sulfanilyamino) pyridine (Sulfapyridine). Proc. Soc. Exp. Biol & Med. 40: 428, 1939.

Gross, P., Cooper, F. B. and Lewis, M.: Urinary Concretions Caused by Sulfapyridine. Ibid p. 448.

SOME PROBLEMS OF DIPHTHERIA CONTROL*

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In many sections of the United States diphtheria has decreased to the point that it is no longer a public health or medical problem of significance. This is not so in North Carolina; for during the past five years there have been 10,679 cases and 909 deaths from this disease reported in our state. The case fatality rate has not materially changed, even though the specific death rate has shown a decrease. The questions naturally arise, "Why is this true? Why does North Carolina have nearly 7 per cent of all the diphtheria reported in the United States? Are there factors involved that we have overlooked?" A study of our problem from a number of different angles may disclose some of the reasons why our record is so unsatisfactory.

There seems to be no specific peculiarity of the disease itself in this section of the United States which could account for the large number of cases. According to available records case fatality remains about as it has in this state and is not out of line with that of other sections of the country. Laryngeal diphtheria is still the form of this disease which causes the greatest mortality. As yet there have not been definitely identified in North Carolina cases of diphtheria gravis such as have been reported from time to time in European countries. This type apparently does not respond to the administration of diphtheria antitoxin as does the ordinary case of diphtheria. It is quite likely that this strain of organism produces toxin more rapidly than other strains, which of course would indicate the need for immediate administration of adequate doses of a potent antidiphtheritic serum.

The age incidence of diphtheria in North Carolina runs about as it has for years and as it is found in other Southern states. Dauer,(1) in making a study of diphtheria in the South, concluded that the ages most affected by diphtheria are those of the preschool child. This varies somewhat from findings in some of the Northern states, where older age groups were chiefly affected. We in North Carolina have known for years that the majority of our cases occur in the ages from one to five years; about 55 per cent of all our cases are in this group. Naturally we would expect to find the highest mortality in these same ages; 80 per cent of deaths occur here. There seems to be no significant variation in rural and urban children. Possibly a higher percentage of deaths may be found in rural than in urban children, but this very likely would be due to the lack of prompt medical service when the child becomes ill. There is still an urgent need for prompt and early treatment of all diphtheria cases if we are to get the best results from the administration of diphtheria antitoxin.

Here let me urge not only the early administration of diphtheria antitoxin but also adequate single doses of a potent product. This may be given by either of three routes: subcutaneously, intramuscularly or intravenously. Care should be exercised in order that severe serum reactions may be avoided. Sensitivity tests should precede any administration of serum, whether antidiphtheritic or other.

The only method which will give maximum results in our effort to control diphtheria is proper immunization of the susceptible child or adult. This tells nothing new. The various health departments have been trying to immunize susceptible children for years. In addition, they have tried to educate the parents to the necessity for their cooperation with the family physician. This question arises to plague us: "Have we been immunizing the right children?" It seems reasonable to assume that the public health officer has done what anyone else in his position would do—that is, immunize those who are easy to assemble and who are most easily reached. It naturally follows that children of school ages would comprise this group; and these school children are past the most susceptible ages, so far as diphtheria is concerned. This is not a condemnation of the health officer's efforts, for quite likely diphtheria incidence would have been considerably higher had he not carried his immunization program into the schools. Perhaps

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*Read before the Pediatrics Section of the Medical Society of the State of North Carolina, Bermuda Cruise, May 10, 1939.

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(1) Dauer, C. C.: Morbidity and Mortality from Dipththeria in the South, Am. J. Hyg. 23:3 (May) 1936.

our recorded decrease in diphtheria in North Carolina in recent years, as compared with the high incidence of earlier years, is due to the immunization of these same school children. If this is true, then we must redouble our efforts to protect the pre-school child as well as continue our control program in the public schools.

If the program of diphtheria control is to be most effective it is necessary to immunize the pre-school child. Furthermore, we should not consider the term "pre-school child" as applicable only to the child who is in his fifth year of life or who is to begin school the following year. The ideal procedure is immunization of each child during his first year of life. The protection afforded by inoculation with toxoid should be confirmed by the presence of a negative Schick test made three to six months later.

The private practitioner is in better position to perform this service for his patients than is anyone else. As was clearly demonstrated last year before this Society in a paper by Doctor Bugg(2) of Raleigh, the family physician is the most important factor in making diphtheria as rare in North Carolina as is smallpox. Should not the family physician be privileged to insist upon parents bringing their babies back to his office for protection against this most devastating disease? The time generally agreed upon as the best for immunization is during the second half of the first year of life. It matters little whether the age selected is at six months or nine months. We must remember that diphtheria does occur under one year of age. Our records for 1938 show that 56 of the 2,442 reported diptheria cases occurred in children under one year of age. The important thing is that immunization be done. The family doctor has a responsibility to fulfill in his capacity as medical adviser to the family and should feel as free to insist upon immunization against diphtheria as he would to insist upon protection by vaccine of those in a family who had been exposed to typhoid fever.

The last General Assembly in North Carolina enacted a law requiring immunization of all babies between the ages of six and twelve months. This measure is a wise public health procedure, and if scrupulously followed, will eliminate diphtheria, or at least make it a rare disease in our state. This should not be such a difficult task, for there would be about seventy thousand babies to be immunized each year. Within five years diphtheria should reach a very low incidence if these babies are protected within the year of their birth.

The choice of an immunizing agent has been somewhat of a puzzle to many practicing physicians. Considerable doubt has been cast upon the effectiveness of alum precipitated toxoid in providing lasting protection against diphtheria. A fairly large number of children have had the disease following its administration. In 1937 we sent questionnaires to every physician in the state who reported a case of diphtheria to the State Board of Health. This was done in an effort to determine the number of children who had previously received one of the immunizing agents. In this connection, I wish to thank the practicing physicians of North Carolina for their cooperation in this study. Because of their assistance a much larger percentage of the questionnaires were returned to us with this information than are usually obtained in such a study. A statistical summary of this information for the year 1937, the period of the study, is presented at this time.

A total of 2,056 cases were reported during 1937. A questionnaire for each case was sent to the reporting physician. A total of 1,516 questionnaires were returned, or approximately 74 per cent. Of this number 237 cases, or 16 per cent, had been previously immunized. Of these 237 cases twenty-five had had Schick tests made. Of these twenty-five who were Schick-tested six patients had positive tests, seventeen negative tests and two unknown. Of those with negative tests six had received toxin antitoxin, two had received toxoid, eight had had alum precipitated toxoid and one was unknown. We are not able to give the lapse of time between immunization of the child and the time when the disease developed. There is a chance, however, that some of those receiving an immunization agent developed the disease before immunity had sufficient time to be established.

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(2) Bugg, C. R.: Some Aspects of the Diphtheria Problem, Transactions of the Medical Society of the State of North Carolina, 1938, p. 130.

In a recent report by Volk and Bunney(3) different immunization procedures were evaluated. Their findings indicate that one dose of alum precipitated toxoid is better than two doses of fluid toxoid, giving protection to a greater number and maintaining a higher level of antibody content of the blood for a longer time. At the end of two years 77.6 per cent of children had an antibody or antitoxin level that gave protection. At the end of the first year this was 87.5 per cent as compared with 60.4 per cent for two doses of fluid toxoid. From this study, which made use of controls, it seems wise to continue the use of alum precipitated toxoid. They showed further that after two doses of alum precipitated toxoid the response after four months was 100 per cent. At the time of the report a year had not elapsed; so figures for this group are not available.

McGinness(4) and Gill(5), who made some of the original investigations in this country on the immunizing properties of the alum precipitated toxoid, have unpublished data which indicate that permanent immunity is found in a larger percentage of those receiving this agent than in those receiving other such agents. Furthermore, the investigators who originally threw doubt upon the antigenic properties of alum precipitated toxoid have admitted that their original findings cannot be consistently confirmed.

Conclusions

1. That diphtheria can be controlled and all but eliminated if our present knowledge is applied to the proper age groups.

2. That the family physician should be of the greatest aid to public health officials in bringing about the control of this disease.

3. That alum precipitated toxoid is the antigenic agent of choice, and that two doses administered at three-week intervals is the method of choice.

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(3) Volk, V. K. and Bunney, W. E.: Diphtheria Immunization with Fluid Toxoid and Alum Precipitated Toxoid, Am. J. Pub. Health 29:3 (March) 1939.

(4) McGinness, Virginia State Health Department (by personal communication with author).

(5) Gill, Alabama State Health Department (by personal communication with author).

THE ELECTROCARDIOGRAM AS AN AID IN CARDIAC DIAGNOSIS*

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Within recent years, electrocardiographs have been so simplified that they are coming into general use. It seems timely, therefore, to stress the fact that the cardiogram is only an aid in cardiac diagnosis. The tracings alone should never be used as the sole means of cardiac examination. With the addition of each new instrument of precision to our armamentarium, we are prone to put too much reliance on the technical findings and not to rely enough on our histories and physical examinations.

Dr. Paul D. White starts the section on electrocardiography in his book(1) with the following paragraph:

"The electrocardiograph does not take the place of such other methods of examination as history taking, percussion, auscultation and roentgenology but it does obviate in large part the need of taking mechanical graphic records of arterial and venous pulses and of the apex impulse. Finally, it must be realized that the electrocardiogram may be perfectly normal, even in the presence of serious heart disease. This method of study should therefore be viewed modestly as helpful and supplementary, but not accorded too great importance."

The electrocardiogram will give us valuable information on: (1) the rate and rhythm (2) the size of the chambers of the heart (3) the condition of the conorary arteries, and (4) the condition of the heart muscle.

To appreciate the abnormalities to be shown, we must first know the normal tracing. The configurations of the tracing are produced by photographing the motions of a galvanometer string activated by the heart's current. Motions of the galvanometer string produce different waves, arbitrarily designated by letters. The P wave is that one produced by the contraction of the auricles, the QRS complex is produced by the spread of electrical current over the ventricles, and the T waves are produced by ventricular contraction. Voltage of the different waves (shown by horizontal lines 1 mm. apart),

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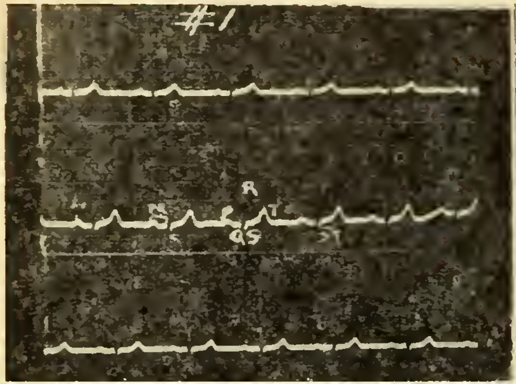
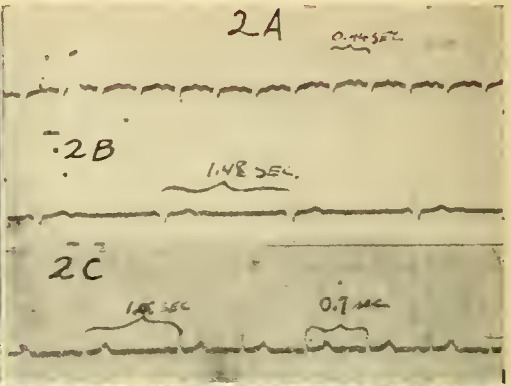
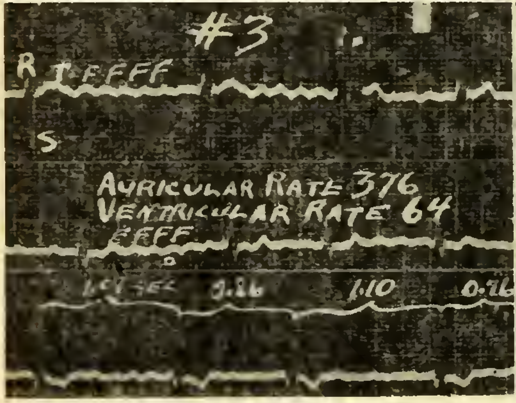
*Read before the Section on the Practice of Medicine, Medical Society of the State of North Carolina, Bermuda Cruise, May 13, 1939.







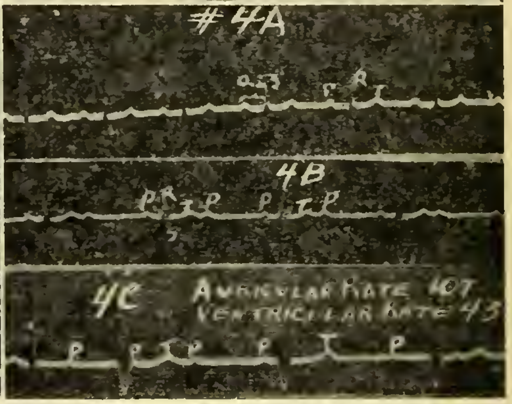


Figure 1, Normal Electrocardiogram.

Figure 3, Auricular Fibrillation.

Figure 2. a) Sino-Auricular Tachycardia, b) Sinus Bradycardia, c) Sinus Arythmia.

Figure 4, a) First Degree Auriculo-Ventricular Block, b) 2:1 AV Block. c) Complete Heart Block.

their direction, shape and time relationships (measured by the vertical lines indicating 0.04 second intervals) will vary with different heart diseases. The base line will vary in shape with certain conditions. It is upon these variations in shape, amplitude and time relationships that we interpret our tracings.

Each heart contraction is shown by the combination of waves, P, QRS, and T. (fig. 1). The auricular wave (P) initiates the complex with an upward swing of one to two mm It lasts not more than 0.1 second. Within 0.2 seconds of the beginning of P, the QRS group is shown. This group may begin with a small downward deflection (Q) followed by a large upward excursion (R) of 7 to 17 mm. and then another small downward deflection (S). It must not take more than 0.1 second for this electrical spread to take place. This is followed by the ventricular wave, T. The T wave is a peaked or rounded upward deflection of from 1.5 to 5 mm. and lasting about 0.2 second. This wave is followed by the straight base-line of diastole in which no electrical change takes place.

Disturbance In Rhythm

The impulse stimulating the contraction of the heart originates at the sino-auricular node and such rhythm is known as sinus rhythm (fig. 1). The impulses to beat may originate too rapidly, giving sinus tachycardia, (fig. 2A) or too slowly, giving sinus bradycardia (fig. 2B). The origin of the impulse may be affected by the respiratory phase, giving sinus arhythmia characterized by slowing of heart rate on expiration (fig. 2C). These are the simplest and most frequent arythmias and usually do not signify any cardiac disease. The sinus tachycardia shown occurred in an anemic patient, while the bradycardia was in a patient having a brain tumor with increased intracranial pressure. Auricular tachycardia may be due to disturbance in the nerve mechanism of the heart, to hyperthyroidism, infection, anemias and many extracardiac diseases. Sinus bradycardia, on the other hand, may be due to excessive vagus activity, to increased intracranial pressure and may be present normally in men of the athletic type.

Probably the next most frequent arythmia is auricular fibrillation (fig. 3). In this state the sino-auricular node does not originate the impulse to beat, but the auricular wall is in circus-like movement sending impulses to the ventricles at the rate of 350 to 500 per minute. Naturally, the ventricles are unable to respond to this rapid rate and respond irregularly with systoles. These tracings show an absolute lack of rhythm in ventricular activity and a wavy, irregular base line representing the fibrillation of the auricles. Practically always, this arythmia means a diseased auricular myocardium, be due to poor coronary circulation, to hyperthyroidism, to toxicity as in pneumonia or to arteriosclerosis.

Auricular flutter sometimes precedes fibrillation. In this condition, the auricles are beating rapidly and regularly as shown by flutter waves in the base line of the tracing. The ventricles are unable to respond at so rapid a rate, so that there is an auricoloventricular block in the ratio of 2:1, or 4:1. Flutter may be a toxic response but is usually due to a diseased myocardium.

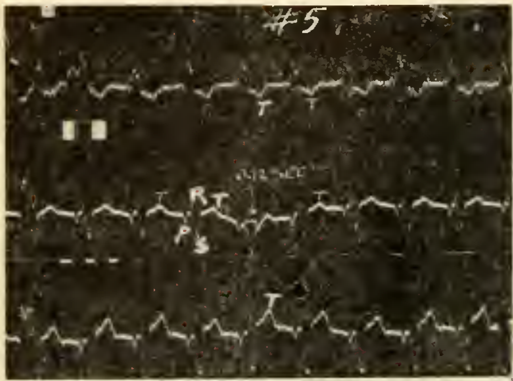
Toxic processes, inflammatory reactions and fibrosis of heart muscle affect the conducting mechanism, producing varying degrees of block (fig. 4). The first degree is shown by a delay of more than 0.2 seconds in the conduction of the impulses from the sino-auricular node to the ventricle (4-A). Such a blocking is often present in many infectious processes, particularly in active rheumatic fever. Arteriosclerosis is also a frequent producer of varying degrees of block. In a higher degree of AV block, the ventricle fails to respond to a half or a third of the auricular impulses. Thus the tracing will show P waves at regular intervals and QRS complexes following every second or third P wave. The block shown here (4-B) was produced by toxic action of digitalis. In severe toxic states and in marked myocardial disease, there may be a complete dissociation of auricle and ventricle, the auricle beating at one rate, the ventricle at another, and the ventricular systoles showing their ventricular origins by slow rate and prolonged QRS phases. This figure (4-C) shows complete block due to a diphtheritic myocarditis.

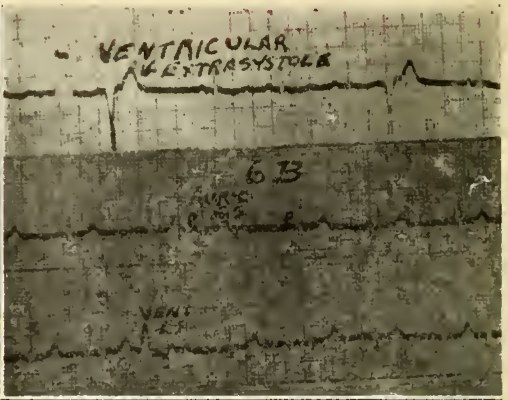
The conducting bundle of His may be so affected with scarring, fibrosis, or inflammatory processes that the spread of the impulses over the ventricles is delayed longer than the normal 0.1 second (fig. 5). Without characteristic axis deviation, this is known as intraventricular block. If the left bundle branch is more involved, the above description holds true and is accompanied by an inverted T/1 with left axis deviation. In right bundle branch block, T/1 is upright, T/3 is inverted and there is a right axis deviation. Any form of intraventricular block must be regarded very seriously although it is possible for patients with this lesion to live comfortably for many years. It is usually due to coronary arteriosclerosis or to syphilis.

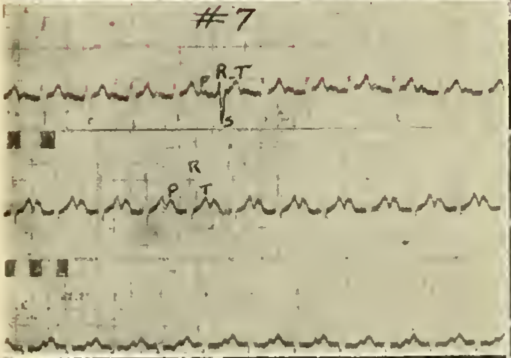
Extrasystoles, either auricular or ventricular, frequently produce an arythmia of which patients complain (fig. 6B). When the extrasystole is auricular in origin, the P wave is present, but it may differ from other P waves shown in the strip. After it, comes a ventricular QRS complex like all the others. The compensatory pause after an auricular extrasystole is usually a little shorter than after a ventricular extrasystole. Aberrant beats arising in the ventricular muscle show a different QRS and T (fig. 6A), being usually larger and of longer duration. In themselves, these abnormal beats do not necessarily mean a diseased heart muscle, but they do imply the presence of an irritable focus in either the auricular or ventricular myocardium. They are frequently detected in the presence of chronic intoxications as from excessive use of tea, coffee, tobacco, alcohol, and from chronic focal infection. They also occur frequently in the presence of myocardial disease.

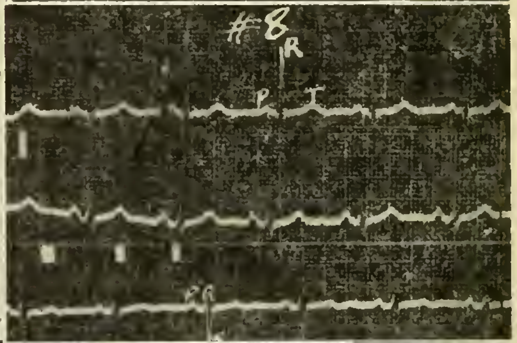
Changes in Size of the Chambers of the Heart.

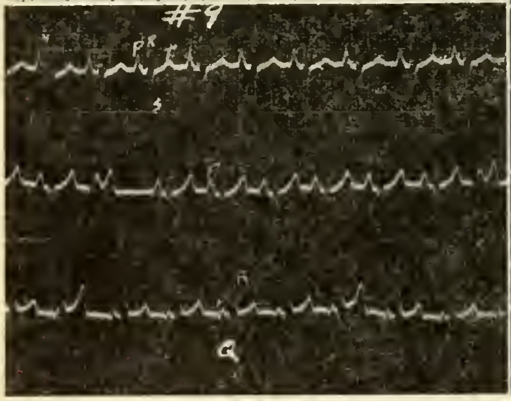
As we have seen before in the normal heart, (in which the ventricles and auricles are relatively proportionate), the main











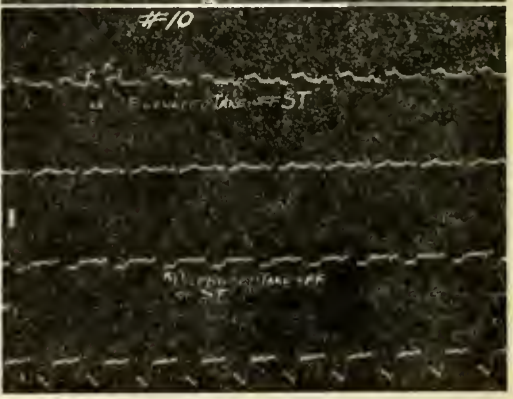


Figure 5, Intraventricular Block.
Figure 7, Large P Waves.
Figure 9, Right Axis Deviation.

Figure 6, Extrasystoles a) Ventricular b) Auricular.
Figure 8, Left Axis Deviation.
Figure 10, Early Conorary Occlusion.

swings of the QRS groups are directed upward. With hypertrophy of one ventricle there will be a rotation of the heart's electrical axis toward the enlarged ventricle. This rotation produces a deviation of the axis of the QRS groups, so that in right axis deviation (fig. 7), the main swing of the QRS group is downward in lead one—i.e., the voltage of the S wave in lead one exceeds that of R'1. In right axis deviation lead two will be approximately an average of leads one and three. Lead three will have its main swing in an upward direction. This finding is quite constant in both mitral stenosis of rheumatic heart disease and in obstruction to the pulmonary circulation, both of which conditions produce right ventricular hypertrophy.

Left axis deviation is shown (fig. 8), by an upward swing of QRS in lead one with a negative deflection of that group in lead three—i.e., S/3 has a greater voltage than R/3. This finding is frequent in left ventricular hypertrophy due to hypertension, mitral insufficiency or aortic valve disease.

Hypertrophy of the auricles does not produce any axis deviation but shows itself in abnormalities of the P waves (fig. 9). These waves will be of abnormal height, (over 2 mm.), of longer duration, (more than 0.1 second) and will probably be notched. Such waves are frequently seen in mitral stenosis and in obstruction of the pulmonary circulation.

Axis deviation may, in some cases, not indicate hypertrophy. The build of the patient and the patient's position while the tracing is being made may influence the axis. Thus, a very thin subject may have a right axis deviation with no heart disease, while a left axis deviation may normally be present in obese subjects.

Hypertrophy of itself does not imply a weakened myocardium, but merely an effort on the part of the heart to overcome a mechanical obstruction. So long as we have only axis deviation present in the tracing we may say that the heart muscle is sound.

Occasionally, we may see a heart greatly enlarged and not showing any axis deviation. This is likely to occur when both sides of the heart are equally enlarged as in advanced arteriosclerosis and hypertension. Left axis deviation is usually present however.

Diseases of the Coronary Arteries

The electrocardiograph's greatest use lies in the detection of coronary artery occlusion and coronary artery disease. Here we have definite findings in approximately 80 per cent of patients with this condition.

Within a few hours to a day or two after an acute occlusion, definite changes take place in the ST segment (fig. 10). Instead of passing from S to T level with the base line, this segment will pass directly from about the mid-portion of R or S to T, so that this segment is elevated above or depressed below the base line. Usually when the ST segment is above the base line in lead one, it will be below in lead three, and vice versa. These changes usually are accompanied by a deep Q wave either in lead one or three. Anterior infarction is shown by an elevated take-off of ST, with a depressed take-off of ST/3 accompanied by a deep Q/1. Posterior infarction is shown by the opposite—i.e., a depressed take-off of ST/1, elevated take-off of ST/3 and a deep Q/3. These abnormal take-offs persist for several days.

As healing occurs, the ST segment tends to approach a level with the base line (fig. 11). This leads to the production of the "Coronary T wave". This is characterized by an upward convexity in the ST segment leading to an inverted T wave. In anterior infarction this abnormal T wave is found in leads and and two. T/3 is directed upward. Posterior infarction produces an opposite effect—i.e., the ST convexity and the inverted T wave is found in lead three and T/1 is upright.

As years or months go by, these coronary T waves may be replaced by normal ones, but frequently they persist.

Coronary artery disease may be implied by signs of myocardial disease, of which, more later. A deep Q/3 (fig. 12) is frequently found in patients having coronary artery sclerosis and in those having angina pectoris. To be considered deep, Q/3 must be 25 per cent or more of the greatest excursion of QRS in any of the three standard leads. A deep Q/1 would probably have the same significance.

Unfortunately, the electrocardiogram shows nothing typical in angina pectoris. During an attack a tracing like that described for acute occlusion may be found, and a normal tracing may be obtained an hour or so after the attack. A deep Q/3 must be considered strongly suggestive of angina.

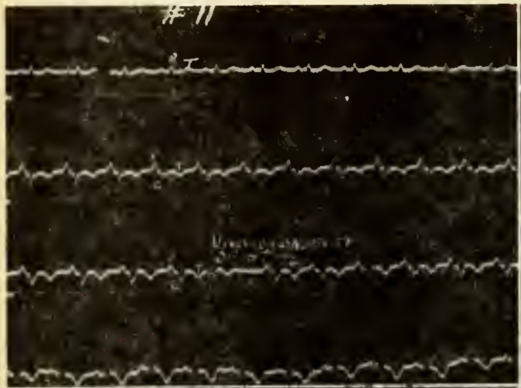
Changes Due to a Diseased Myocardium

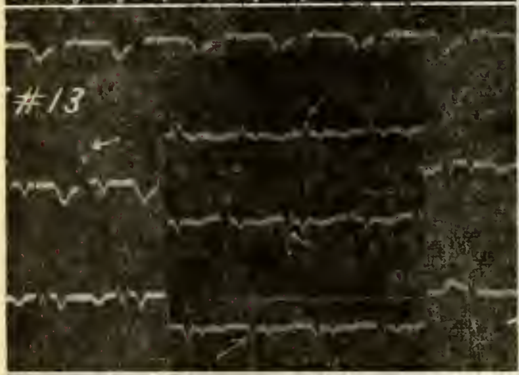
Under previous headings we have mentioned several of these electrocardiographic signs of a diseased muscle—namely, auricular fibrillation, AV block, intraventricular block, bundle branch block, coronary T waves and deep Q waves.

Further evidence of myocardial disease is obtained from the appearance and voltage of the QRS groups and by the amplitude and direction of the T wave.

Notching or slurring of QRS (fig. 13) in a complex of low voltage may not be significant, but when it is present in a complex of average amplitude, particularly if it is accompanied by any other abnormality, we may safely say that the myocardium is diseased. This finding is usually permanent and occurs in rather diffuse myocardial fibrosis.

Recall that the normal voltage of the QRS complex varies between 0.6 and 1.7 mv. The amplitude of the QRS complex is determined to some extent by the functional state of the heart muscle, but it is generally believed that voltage of over 1.7 mv. is an indication of hypertrophy when no notching is present in the swing. Voltages below 0.5 mv. (fig. 14) always indicate a diseased heart muscle. To be significant, the low voltage must be present in all three leads—i.e., if the QRS complexes are low in one lead only and the voltage is adequate in the others, no significance is attached to the finding. Hypothyroidism frequently produces low voltage of





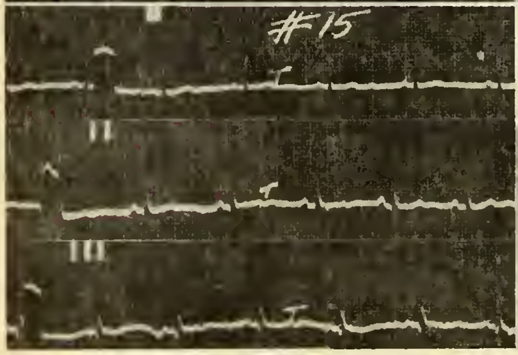
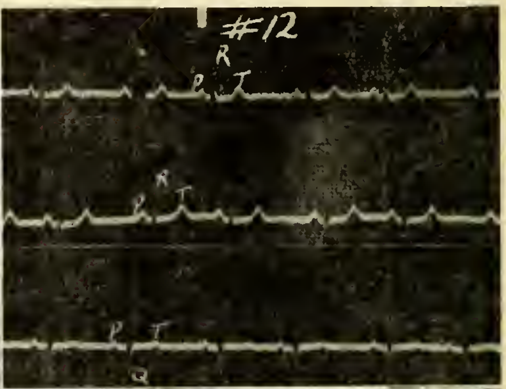
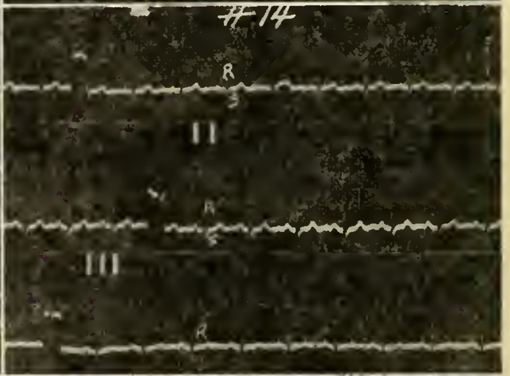


Figure 11, Coronary T Waves.
Figure 13, Notching and Slurring of QRS.
Figure 15, Low Voltage of T Waves.





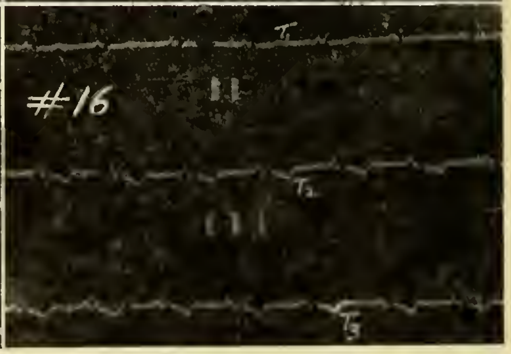


Figure 12, Deep Q/3.
Figure 14, Low Voltage of QRS.
Figure 16, Inverted T/2.

QRS. Generalized myocardial fibrosis will frequently cause the same thing.

The amplitude of the T wave is also partly dependent upon the functional state of the heart muscle, normal varying from 0.15 to 0.5 mv. (fig. 15). Here too, the finding of a low T wave, in one lead only, is insignificant. If however the voltage is below 0.15 mv. in all three leads we must say that the myocardium is impaired. A still more significant finding is the inversion of T in lead one or two (fig. 16). This always means a diseased myocardium unless it occurs in an extrasystole.

Conclusion

An effort has been made to review some of the commoner electrocardiographic abnormalities with the purpose of showing what we may learn from an electrocardiogram. We may say that its greatest value lies in:

(1) detecting coronary occlusion and coronary artery disease, (2) determining the rhythm, and (3) estimating the condition of the heart muscle.

The making of a tracing gives little more information than the stethoscope in the study of valve lesions. In studying the condition of the heart muscle we are frequently able to evaluate more accurately an operative risk. The electrocardiogram is a great *aid* in cardiac diagnosis, but no diagnosis should be made on it alone.

Discussion

DR. VERNE S. CAVINESS (Raleigh): Mr. Chairman and Gentlemen: I have enjoyed Dr. McNeill's paper very much. He has given us a concise covering of the subject, and it is a subject which is becoming of more widely recognized importance.

I think that the chief and perhaps the most valuable point that he has made is the necessity for coordination in this branch of medicine, as in all others, between the laboratory and the clinical findings. I don't think we are justified at any time in taking the clinical stethoscopic and exercise tests, and the history of the patient, without adding the caridogram if the patient has a very definite cardiac disease or symptoms.

There are a number of factors that have to be considered. Sometimes, I think the type of machine receives too much importance. A good workman never blames his tools. But I do think that there are variations in machines, and that these variations in the type of tracing made must always be considered in interpreting and evaluating the results.

The technique in making the tracings is very important and requires a great deal of attention. A tracing can be made which is utterly valueless, or one can be made which is perfectly good. One thing that must be remembered always is the standardization of the string, if you use a machine that has a string. The interpretation and evaluation of the results of tracings, however, are far more important than the actual technique of making the tracings.

Dr. McNeill stated the chief value of the cardiogram is the evaluation of the functioning of the heart muscle. There is no other way of making such an accurate evaluation of the qualities in the heart muscle. If this is adhered to, and if we make a careful cardiographic study of all suspected cardiac cases, I think it would be of great help to the neuro-psychiatrists. All of us have seen many patients who were told they had heart trouble and were made permanent neurotics by misinformation. Frequently, these patients have no heart trouble, and it is difficult later to convince them of the fact that they have been misinformed in the beginning.

Checking treatment is a point at which we can make good use of the cardiograph. When a patient is first seen, we frequently find that he has been taking large amounts of digitalis and shows effects of digitalis poisoning which, at times, even the best of clinicians can confuse with definite heart disease in the cardiograms, unless they make a very careful interpretation. I am sure all of us remember life insurance scandals of that sort that occurred relatively recently.

To those of you not familiar with the making of the cardiograms, lead one is the difference in electrical potential between the right arm and the left arm. Lead two is the difference in electrical potential between the right arm and the left leg. Lead three is the difference between the left leg and the left arm. The fourth lead, or multiples of that as desired, is the difference between the chest and one arm or one leg.

From this I think you can see it is relatively easy to get a change in electrical potential. In drawing up instructions for the making of cardiograms, you cannot presuppose abnormal positions of the heart or variations in the position of the body. A tranverse heart will give quite a different tracing from a vertical heart. I mention that to show the importance of giving careful consideration to all your clinical findings, as well as to interpretations of the cardiogram itself.

Cardiograms have great value in other ways. When a patient passes the age of forty, begins getting into the age of arteriosclerosis and the other chronic degenerative diseases, and comes up for an elective surgical operation, the mortality rate can be greatly reduced by a careful study of the circulatory system. Various hospitals have reduced their operative mortality practically to zero in various types of operations by refusing to do elective operations on patients who have definite indication of coronary sclerosis, or other heart disease.

DR. WILLIAM B. DEWAR (Raleigh): Possibly my greatest pleasure with cardiographs has been helping people who do not have organic heart disease. The patient who may have the syndromes, after a complete study of that case, including history, laboratory findings, with careful physical examination can often be rehabilitated and sent back to hard work.

DR. McNEILL: One of the points made by Dr. Dewar was the need for reassurance. So often we see patients under emotional stress, with dyspnea on effort, who have been told that they have a bad heart. They suffer from that diagnosis for months on end, sometimes years, and it is awfully hard to convince them that they don't have honest-to-goodness heart disease. I believe a cardiogram is our best means of doing that.

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under the direction of its Editorial Board.

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Editorials

BY WAY OF INTRODUCTION

With this issue the NORTH CAROLINA MEDICAL JOURNAL becomes the official organ of the Medical Society of the State of North Carolina. It will go to every member of the Society, the subscription being included in the regular dues. In this its first number we, the members of the editorial board, wish to outline the policy of the magazine so far as possible — bearing in mind that it is a newly born infant and that its features may change greatly as it reaches adolescence and maturity.

The mission of the NORTH CAROLINA MEDICAL JOURNAL is to serve as a medium for North Carolina doctors to use in exchanging ideas; as a purveyor of worth-while medical information, whether from our own members or from guest speakers and writers; as a means of contact between the president, the secretary, and other officers and members of the society; as a permanent record of research by society members; and as a news letter about the interesting doings of North Carolina doctors. Irvin Cobb's famous criticism of North Carolina as needing a press agent applies with peculiar force to its medical profession. From first hand acquaintance we know that the doctors of this state will compare favorably as a profession with those of any state in the union; but most of them have been too modest about expressing themselves. It is our hope that this magazine will stimulate a goodly number of North Carolina doctors to let their light shine more brightly before men.

For its material, the journal must depend upon a number of sources. All papers read before the State Society are, of course, its property; but these will not be nearly enough. We hope to get some valuable contributions from guest speakers who come to our state. We also expect to use the best of the papers read at district and county meetings. We shall depend upon our medical schools and our hospitals for reports of worth-while clinics, clinico-pathological conferences, and research work. Last, but by no means least, we shall look to the individual doctors throughout the state for instructive case reports and interesting news notes.

While, for many reasons, it will be impractical and impossible to print all material submitted, every contributor may be quite sure that his offering will be given a sympathetic reading by at least two men. If they disagree as to its merits, a third will cast the deciding vote. In order to do justice to papers submitted to the journal, every member of the editorial board has promised to help. In addition, the board has appointed a number of unofficial associate editors to represent every special branch of medicine as well as general practice. The names of these men will not appear on the masthead, but they will render a real service, nevertheless.

Every doctor in active practice should have from time to time interesting and instructive cases to report; bits of practical technique to pass on to others; observations worth organizing into papers for the state, district, or county society, to be submitted as a matter of course to this journal. We want every member of the Medical Society of the State of North Carolina, veteran or fledgling, college professor or intern, to feel that the NORTH CAROLINA MEDICAL JOURNAL belongs to *him*. It is the organ of the whole Society, and its success—let us not suggest any other outcome—depends upon the wholehearted co-operation of the entire membership.

THE NORTH CAROLINA MEDICAL JOURNAL AND THE AMERICAN MEDICAL ASSOCIATION.

One ambition of its editorial board is that the NORTH CAROLINA MEDICAL JOURNAL may serve to strengthen the ties between our State Society and its parent, the American Medical Association. As a first step toward this aim, we are happy to present in this first issue greetings from the four most prominent officials of the American Medical Association: Dr. Rock Sleyster, President; Dr. Nathan B. Van Etten, President-Elect; Dr. Morris Fishbein, Editor of its Journal; and Dr. Olin West, Secretary and General Manager. To each of these we wish to express our sincere thanks for their words of counsel and cheer; and we pledge them, as heads of the A.M.A. family, North Carolina's unwavering loyalty.

* * * *

GREETINGS

NORTH CAROLINA MEDICAL JOURNAL

The American Medical Association has always regarded with pride and satisfaction the growth and progress of the constituent society of North Carolina. Under difficulties not experienced by all of its children, the Medical Society of North Carolina has developed in quality of membership, in educational facilities, and in constructive programs well carried out, to an envied position among the leading societies of this country.

Now, the A.M.A. welcomes to the official family of Journals one of its progeny—a new-born, christened "North Carolina Medical Journal". This medium will afford opportunity to give expression to scientific progress in the treatment of disease and to those advances and activities carried on for the protection of the health of the people of North Carolina. This new Journal will be a champion of ideals. It will be a defender of those established policies so necessary to insure to the people of this great state the highest standards of medical service.

ROCK SLEYSTER, M.D.

* * * *

A NEW MEMBER FOR THE DISTINGUISHED COMPANY OF STATE MEDICAL JOURNALS

More than twenty-five years ago, when I first became assistant to the editor of *The Journal of the American Medical Association,* the state medical journals had already begun to adopt scientific and ethical standards in relationship to their advertising. Few of them, however, were distinguished for scientific and editorial competence. More and more, as the years have passed, it has become apparent that physicians of the constituent state associations of the American Medical Association were beginning to recognize the importance of the state medical journals as leaders in the field of medical thought.

Today there remains but one of the state medical journals which fails to follow the standards of the various scientific councils of the American Medical Association in its acceptance of drugs, foods, and physical devices which are of known composition or contruction, and promoted with established claims.

Moreover, practically all the publications which now represent the constituent state associations are the property of these associations rather than of any private publishing agency. With sound scientific management and with the assistance of the Cooperative Medical Advertising Bureau, they are published not only without excess cost to the state medical associations, but in some instances actually yield a profit, which is of service in promoting scientific and public relations work of these societies.

An editor who studies these periodicals will realize that they do not follow any fixed pattern in composition, makeup, or style. They are, indeed, as individual in their appearance and in the nature of the material which they present as are the states themselves. There is reason to believe that the state medical journal of North Carolina will be able to reflect as well, the personality and the character of the medical profession of that state. North Carolina is also to be congratulated on the acceptance of the editorship by Dr. Wingate M. Johnson, whose writings have already received national recognition by inclusion in periodicals, both popular and scientific, of national circulation.

North Carolina is welcome to the family of state medical journals, coming at a time when that family has emerged from its original state of poverty and comparative illiteracy into an aristocratic assemblage of erudite and financially competent journals!

MORRIS FISHBEIN, M.D.

CALL THE DOCTOR

Society is sick, suffering, cold, hungry, senile, frightened. Unhealthy desires fanned by hot currents of discontent make life increasingly hazardous. Overactive glands are producing a hypertensive, unstable, inflammable race. Oblique morals, fragile nerves, unsound minds, all diseases of civilization common to man alone of all animals are filling hospital beds. While the same forces push some to the frontiers of genius, others who are meshed in lower gears bog down to dead levels of mediocrity or unemployable indigency.

Fifty years of modern medicine have salvaged so many that the average life expectancy is now sixty-two years. At the same time reproduction is attended with difficulty. Ten per cent of marriages are sterile and there is no evidence that replacements are of stronger quality. Too many young mothers die; too many children fail to attain a strong maturity; too many hearts fail to keep step with modern speeds; too many malignancies destroy young adults; too many people between the ages of thirty-five and sixty-five are limping along with incapacities.

In the midst of this dismal picture occur so many colorful stirrings by groups and individuals that hope still lives.

Christopher Morley said recently "One astonishing phenomenon has become plainly manifest; the obvious reluctance of civilization to tear itself to pieces". "I think it the greatest tribute to civilization that if it should perish it will do so reluctantly".

With a promise of recovery it is time to call the doctor. If civilization improves the doctor will have to do much more than patchwork and protective immunization. He will have to concern himself with studies of personality, psychiatry and eugenics. Generations of thoughtful mating under the inspiration of the doctor will surely help; meanwhile the foundations must be laid by the doctor. He must educate youth physically and morally. He must be vigilant in helping the poor to help themselves. He must ease the path of low income people without lowering their morale. He must fight every degenerative disease. He must work out formulae for rehabilitating the victims of the industrial machine. He must keep himself upon a high plane and he must take the directing place in society for which his education qualifies him. His optimism must be stimulated by knowledge of the historic fact that for two thousand years his predecessors who swore to carry on the Hippocratic tradition have survived the rise and fall of many civilizations.

Again and again they have responded to the call for the altruism which has preserved their identity. The new voice which is to speak in North Carolina will be heard by many doctors in city and country—let us hope that it will awaken them and that they will answer the call with all the strength of mind and character which they possess.

Speaking for all whom I may represent I welcome the advent of the NORTH CAROLINA MEDICAL JOURNAL most heartily. I am confident that it will be a great success under its so distinguished leadership.

NATHAN B. VAN ETTEN, M.D.

* * * *

TELEGRAM FROM DR. OLIN WEST

The Medical Society of the State of North Carolina has taken an important forward step in establishing its own journal. I am sure that the journal will make great contribution toward the promotion of the art and science of medicine and the betterment of the public health in your state. I congratulate the Medical Society of the State of North Carolina on having taken this progressive step.

OLIN WEST, M.D.

* * * *

THE NATIONAL COMMITTEE FOR THE EXTENSION OF MEDICAL SERVICE

During the "five years of persecution", as Dr. Rock Sleyster aptly termed the systematic drive made by the Federal government to force some sort of political medicine on the people of the United States, the American Medical Association has often been criticised by its own members for not fighting back hard enough. Many doctors and friends of doctors have felt that there has not been enough effort made to present the cause of organized medicine to the people. This criticism has had just enough justification. to give point to Hambone's observation that "A lie don't hurt a man as much as when a lettle bit of truth git out on him."

There have been more reasons than were apparent on the surface, however, for this attitude on the part of A.M.A. officials. One reason is that it would have required far greater financial resources than the Association has to combat the unlimited funds at the disposal of the government-inspired propagandists. Another reason is that for the A.M.A. officially to have entered the arena of political lobbying would have made it liable to the loss of most of its revenue by the income tax route.

The long-felt need for an articulate body to fight for the justice of our medical ideals in a practical way has been met by the organization of the "National Committee for the Extension of Medical Services". While this group has no organic union with the American Medical Association, its executive board and central committee are composed of men whose loyalty to the cause of organized medicine has been tested in innumerable ways over many years. A number are past presidents of the A.M.A. The chairman of the Executive Board is that grand old war horse, Dr. Edward H. Cary, of Texas, for years Chairman of the Association's Committee on Legislative Activities.

Naturally this group must have money in order to carry on its work effectively. Appeals are being made to physicians and their friends for financial support. Besides giving money, doctors and their friends can be of great help in fighting the threat of political medicine, by reminding their Senators and Representatives that socialized medicine was born in Russia and Germany, and was the entering wedge for totalitarianism in both those countries.

Let all who are interested in opposing the menace of political medicine support in every possible way this organization—and thus let the people of America know that organized medicine is dynamic, not static.

* * * * *

THE PLATFORM OF THE AMERICAN MEDICAL ASSOCIATION

The charge has been made over and over, within as well as without the ranks of the American Medical Association, that organized medicine has adopted a dog-in-the-manger policy in the matter of securing a wider distribution of medical care to the American people. We have been told that, unless we have something constructive to offer, we should not attempt to obstruct such plans as were embodied in the Wagner (so-called) Health Bill.

Whether or not there is any foundation for such a charge, it should now, in justice, be withdrawn. At the annual meeting of the state secretaries of the A.M.A. held in Chicago, November 17 and 18, there was announced "The Platform of the A.M.A." This platform has been given all possible publicity, through the lay press and otherwise. Most of our readers have seen it long ago, and many may have it hanging in their offices; but it will do no harm to reproduce it here.

The American Medical Association advocates:

1. The establisment of an agency of the federal government under which shall be coordinated and administered all medical and health functions of the federal government exclusive of those of the Army and Navy.

2. The allotment of such funds as the Congress may make available to any state in actual need, for the prevention of disease, the promotion of health and the care of the sick on proof of such need.

3. The principle that the care of the public health and the provision of medical service to the sick is primarily a local responsibility.

4. The development of a mechanism for meeting the needs of expansion of preventive medical services with local determination of needs and local control of administration.

5. The extension of medical care for the indigent and the medically indigent with local determination of needs and local control of administration.

6. In the extension of medical services to all the people, the utmost utilization of qualified medical and hospital facilities already established.

7. The continued development of the private practice of medicine, subject to such changes as may be necessary to maintain the quality of medical services and to increase their availability.

8. Expansion of public health and medical services consistent with the American system of democracy.

It will be noted that every point made is positive; there is not a negative note in the whole document, yet it represents the consensus of opinion of the House of Delegates, speaking for the 115,000 members of the A.M.A. It certainly should put to rest the time-honored lie that that body is purely reactionary.

CASE REPORTS

A CASE OF AGRANULOCYTOSIS*

W. M. B. BROWN, M. D.

GREENVILLE

The etiology of Agranulocytic Angina is still unknown; Kracke and Parker(1) have written the most comprehensive article on the factors supposedly concerned in its causation. These two investigators emphasize that it occurs mostly in middle aged women, was a rarity before 1922, and is unknown in negroes. They give suggestive evidence that a drug containing the benzine ring such as amidopyrine, may be an important factor. It is also known to occur occasionally in the course of prolonged infections. V. L. Bolton(2) suggested that possibly the granulopenia of Agranulocytic Angina is due to transformation products of certain drugs which may in susceptible subjects cause arrested maturation of the myeloid elements of the bone marrow.

This case of agranulocytosis is presented to add to the series of cases that have not taken amidopyrine or barbituartes; the history of the patient, patient's family, and the family doctor prove beyond a doubt that she did not take drugs of that series. Even when a tooth was extracted she was given codeine. Several other case reports give a history of having a tooth extracted several weeks or months before an attack of agranulopenia as did the case I am reporting.

The patient was a single, white woman, age 43, school teacher. I was asked to see this patient in consultation with a local dentist on the morning of April 28, 1938, at her home. She gave a history of having had a wisdom tooth extracted on January 14, 1938, and had noticed a spur on the gum where the tooth had been removed, about two weeks previous to my first examination. She returned to her dentist one week later and he removed the spur with a sharp curette. About three days later the patient developed a sore throat which she treated by means of home remedies, while continuing to teach. On the morning when she was first seen by me, she was complaining of severe sore throat, high fever, inability to swallow, and loss of sleep the night before. I immediately sent her to Pitt Community Hospital and had Dr. D. B. Armistead see her.

Past history was essentially negative, the patient having had the usual childhood diseases. She stated that she had felt run down and weak all the winter, but had kept on with her work.

Physical examination showed a white female who appeared critically ill and in a state of collapse. Respiration was very rapid and labored. Her pupils reacted to light and accommodation, and were equal. Fundi were normal. Examination of nose and ears was negative. The entire pharynx and fauces showed extremely marked homogenous inflammation and edema. A grayish-white membrane was noted over the left posterior pillar and pharyngeal wall. The membrane was friable and easily removable. The anterior cervical glands showed great tenderness and swelling. Both the teeth and gums were in fair condition. There was no rigidity of the neck. Examination of the heart showed apex in 5th interspace 8½ cm. from mid sternal line; no cardiac enlargement; ;rhythm regular, rate 120. There were no thrills nor murmurs. A few scattered rales were heard over the bases of both lungs. B.. P. 86-60.

Laboratory examinations were as follows: Spinal puncture showed pressure normal and water-clear fluid, the cell count being normal. Urine: specfiic gravity 1030, acid, 2+ albumin, occasional W. B. C. A blood smear was negative for malarial parasites. The hemogloblin was 52% with red blood cell count 2,900.000. The leukocyte count was 1,000 with polys O, small lymphocytes 30%, large lyphoytes 70%. The following day the leukocytic count was 1,600 with polys 1%, small lymphs 26%, large lymphs 73%.

Treatment consisted in the administration of parenteral glucose and normal saline, ice collar, pantapon for pain, liver extract, oxygen, blood transfusion, and pentnucleitide; however, the patient failed to respond and died on the third day after admission to the hospital.

Discussion

DR. C. N. PEELER (Charlotte): How old was she, Doctor?

DR. BROWN: Forty-three.

DR. PEELER: That makes me think of one of our colored nurses who caught a cold. About two months ago, she caught a cold at home and developed influenza. She used the home remedies, treated herself. She worked for Dr. Bottomley. He went out to see her, gave her codeine and some aspirin to make her comfortable, and thought she would be all right. From the influenza, she developed a pneumonia, bronchial type. She had consolidation following that. An internist treated her and typed the infection and gave her the serum. In the meantime, she had had some sulfanilamide —I don't think a great amount. Her blood picture began to go down—hemoglobin, polys. and total white count. Her red count at the beginning was good. The white count, something like 15,000, went down to 7,000, then to 5,000, and on down to 1500, with a decrease in the neutrophils, too.

All medication was stopped and supportive measurse used. She gradually pulled out of it. Her white count went to 800, but after two transfusions, she finally started to improve.

CHAIRMAN PEERY: The rarity of agranulocytosis in the colored race would make one think how much that sulfanilamide depressed her.

DR. PEELER: Whether the sulfanilamide was responsible or not was the question. I remember she had eighty dollars' worth of the serum during the treatment for the pneumonia.

In that connection, I might report a case of my own that I just dismissed a few days ago. This child was twelve years old, and developed a sore throat. She had her tonsils and adenoids. She had a mild sore throat, and then she developed large glands on both sides. She was sent in at nine o'clock on Sunday night. I couldn't get to do any blood work. She had been given five grains of sulfanilamide by her family doctor before he sent her in. She had a temperature of 104, with a chain of glands on both sides greatly enlarged. She had very little redness of her throat. So I put her on sulfapyridine, not knowing the infection. The next morning I had a complete blood count made, which showed 7800 whites with 78 per cent polys. So I immediately cut down my drug. The next morning her temperature was around 100; blood picture, 1700 whites, 18 per cent polymorphonuclears, and her hemoglobin and red cells had decreased a great deal. The third morning the white cells were about the same—but her polys were 8 per cent. She was looking good. Her color had improved. She was beginning to eat again and was sleeping very well. The glands of her neck had gone down considerably. Next morning her polys. were 4 per cent. We kept her in the hospital a week. When she went home, her polys were 17 per cent. She came back in a week, and the blood picture had improved still more. The polymorphonuclears were 27 per cent. I have not seen her since.

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*Read before the Section on Ophthalmology and Otolaryngology of the Medical Society of the State of North Carolina, May 13, 1939.

(1) Kracke, R. R., and Parker, F. P.: The Relationship of Drug Therapy to Agranulocytosis, J.A.M.A. 105:960 (Sept. 21) 1935.

(2) Bolton, V. L.: Laboratory Study of Amidopyrine, Barbital, Phenyl Hydrazine and Benzene in Relation to Agranulocytic Anginia, J. Lab. & Clin. Med. 20:1199, 1935.

It was very interesting to me. She did not get a great deal of the drug, but when she returned a week later, she looked like a well girl, except for the blood pressure. I follow the rule that I do not give powerful drugs, such as sulfanilamide, except in the hospital where I can get a picture of the blood every day.

STAB WOUND OF HEART

A. Hinson, M.D., F.A.C.S.
Davis Hospital
Statesville

G. M. — Age 28; color, black; occupation, mill work.

PRESENT ILLNESS: Patient stated that he was stabbed in the upper left chest by a colored man ten minutes before admission. There had been very little bleeding from the wound, but he felt very weak and had trouble breathing. Patient was conscious and answered questions properly.

PHYSICAL EXAMINATION: Patient was a very apprehensive colored man of 28 years who was having extreme dyspnea. Weight—estimated 160 pounds. Blood pressure could not be obtained. Temperature 98 degrees. Pulse imperceptible. Scalp and skin aparently normal. Lips, tongue and conjunctiva cyanotic.

Ear, Eye, Nose and Throat—Pupils equal and regular, and react to light and distance. Mucous membranes slightly cyanotic.

Respiratory System — Respiratory rate 28 per minute. Percussion showed an enlargement of the entire heart towards the left and right. Pulse was imperceptible. Heart sounds were very faint and distant. There was a small stab wound in the left chest just lateral to the sternum in the 4th interspace with a slight amount of bleeding from the wound.

The abdomen was flat. No masses were palpable. No tenderness was present.

Nervous system—Patient extremely apprehensive. Patellar and biceps tendon reflexes sluggish.

CLINICAL LABORATORY:

Fluoroscopic examination of the chest showed a pneumothorax to the left with some haziness in the lower part of the chest. Heart shadow was greatly enlarged and of the water bottle type. In the central portion of this there was a clear area suggestive of air in the pericardium. There was very little motion to be seen in the heart.

Specimen of urine could not be obtained.
R. B. C. 4,700,000
Hemoglobin 100%
W. B. C. 13,000
Polys. 86%
Lymph. 16%
Eosinophils 1%
Myeloblasts 2%

Patient was immediately typed for blood transfusion, and 2000 cc. of 5% glucose in saline was given intravenously.

Electrocardigraphic findings before operation showed no definite abnormalities.

Patient was taken to operating room immediately.

OPERATIONS AND FINDINGS:

Anesthesia: Novocain Solution (local infiltration).

An oblique incision was made over the 3rd, 4th, and 5th costochondral junctions with a convexity to the left. The cartilages with the costal muscles were reflected medially. It was necessary to fracture the cartilages at the chondrosternal junction before this could be accomplished. Several adhesions between the lung and the anterior chest wall were ligated. A small amount of blood was evacuated from the lower portion of the left chest. A small stab wound entering the upper and left portion of the pericardial cavity was enlarged and about 100-150 cc. of blood evacuated from the pericardium. A large intercostal artery was found to be severed and bleeding through the lung and pleura into the pericardium. There was also a stab wound in the heart just below the left auricle which was incomplete in that it did not extend through the endocardium. The pericardium was tightly distended with blood which had compressed the heart. When an opening was made into the pericardium there was an immediate escape of blood. The heart rate, which had been rapid and of poor quality, immediately became slower and took on long, powerful contractions. His pulse was immediately felt at the wrist. As the heart muscle was not bleeding it was felt that only one stitch was necessary. One large rubber tissue tubular drain was placed in the pericardium and the wound sutured around this with plain catgut No. 1. Two rubber tissue tubular drains were placed in the pleural cavity and brought out through the lower end of the incision. The wound was then closed with chromic catgut No. 2, re-approximating the cartilages to their normal positions. Several silkworm gut sutures were taken through the skin and the skin closed with Michel clips. Patient was given 450 cc. of citrated blood and 1000 cc. of 5% glucose in normal saline intravenously during the operation.

Electrocardiogram taken immediately after operation showed very little change from that taken before operation.

FINAL DIAGNOSIS:

1. (1) Stab wound, left chest, 4th interspace, passing through lung, pleura and pericardium.
2. (2) Stab wound of heart, left ventricle, incomplete.
3. (3) Cardiac tamponade from intrapericardial hemorrhage.
4. (4) Possible pneumopericardium with pneumothorax.

PROGRESS NOTES DURING STAY IN HOSPITAL:

There was a large amount of drainage during the first 24 hours. His temperature ranged from 102 to 103.8. The drainage was of a serosanguineous nature. Respiration ranged between 30 and 36 per minute. Patient was given two 1000 cc. glucose infusions daily for six days. The pericardial drain was removed in twenty-four hours and was followed by the seepage of 200-300 cc. of serosanguineous material. Temperature remained around 102-103 for

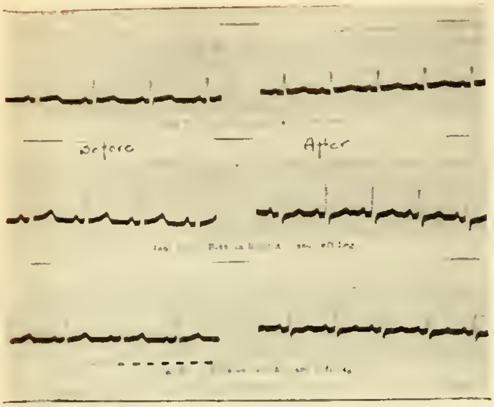

Fig. 1—Electrocardiograms before and after operation.

eight days. Drainage gradually decreased. The pleural drain was removed after six days. Respiration gradually slowed down to around 26 per minute. Pulse retained its good volume from the time of operation and remained between 130 and 140 per minute for ten days. On April 27th 600 cc. of citrated blood was given intravenously without a reaction. On April 30th his temperature was 103 F., respiration 32. There was dullness over the left chest. The chest was aspirated but only 200 ccc. of seropurulent material was removed. Following this there was an increase of discharge from the drainage wound and an open pneumothorax developed. A large amount of fluid of the same nature came out of this opening for the next ten to twelve days. Cultures from this fluid showed many staphylococcus aureus and streptococcus hemolyticus. The discharge gradually became thick, yellowish pus. As soon as the open pneumothorax developed, one-fourth of an ounce of fresh azochloramide solution in olive oil was placed in the open cavity every four hours with a small syringe. This apparently hastened convalescence considerably, because of the marked diminution in the amount of discharge. There were several abscesses around the stitches which were removed on the 12th day. Examination of the chest showed a rapid re-expansion of the left lung but rather distant breath sounds with some dullness persisting at the base. Condition on discharge improved.

FOLLOW-UP NOTES:

May 25, 1938: Patient seen at home. Pulse and respiration normal. Complains of tight feeling in chest occasionally. Appetite good. Small amount of drainage from wound. Dressing changed.

May 30, 1938: Decrease in amount of drainage. Patient still in bed most of the day.

June 7, 1938: Blood pressure 170/90. Weight 146 pounds. X-ray of the chest showed some haziness of the lower portion of the left chest, apparently due to a thickened pleura in this region. Physical examination still showed distant breath sounds in this area. No murmurs were heard. Heart sounds were rather distant. Kahn test was taken at this time and reported as four plus. 0.6 grams Neoarsphenamine was given intravenously. Electrocardiogram at this time showed definite, apparently temporary, myocardial changes suggesting marked reduction of myocardial tone from previous record.

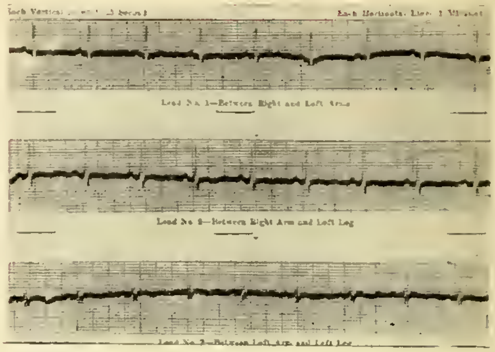
Lead No. 1—Between Right and Left Arms
Lead No. 2—Between Right Arm and Left Leg
Lead No. 3—Between Left Arm and Left Leg

Fig. 2—Electrocardiogram 6 weeks after operation.

June 14, 1938: Dressing changed. Small amount of discharge. Slight deformity of costal cartilages which were very firm. They apparently had healed well. 0.6 gram of Neoarsphenamine was given intravenously.

July 1, 1938: Dressing changed. Drainage ceased. Patient to do light work. 0.6 gram Neoarsphenamine given intravenously.

Oct. 28, 1939: Has been receiving antiluetic therapy regularly. Chest firm. No discomfort. Apparently cured.

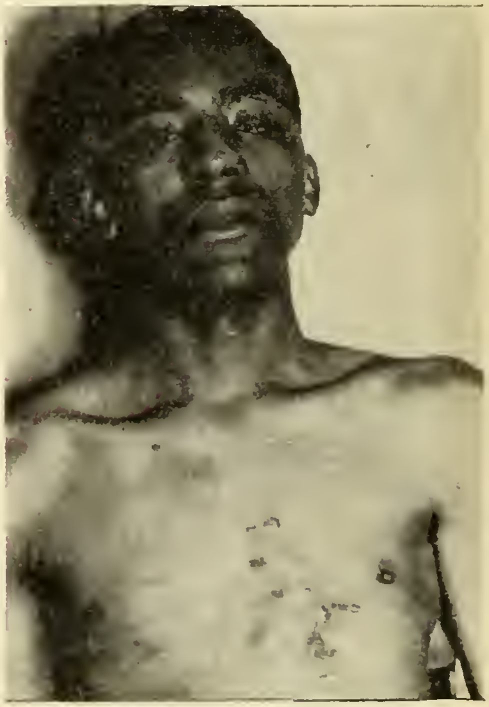

Fig. 3—Scar of operation.

STAPHYLOCOCCUS MENINGITIS

Report of a Case With Cure

ROBERT L. MCMILLAN, M.D.
WINSTON-SALEM

From the available details at hand, both in the current literature and in various textbooks, the outstanding feature of staphylococcus meningitis is that the disease is almost uniformly fatal regardless of origin, duration, patient's age, sex, or the treatment instituted. Only eleven cases have been reported as treated and cured up to 1939.

The following case is presented not with the idea of demonstrating a medical rarity, but rather to bring forward as a suggestion for further use in diseases of this type, staphylococcus antitoxin by the three main parenteral routes, subarachnoid irrigation, and blood transfusions.

The effectiveness of staphylococcus antitoxin is greatly enhanced by the use of sulfanilamide and likely will be more so by sulfapyridine, since the latter has been shown to have a very definite bacteriostatic action on staphylococci. Also, it has been clearly demonstrated in cases of staphylococcic bacteremia that blood transfusions greatly increase the effectiveness of the antitoxin, and should be liberally employed.

REPORT OF CASE

P. J. V., a seven year old school girl, was admitted to the North Carolina Baptist Hospital May 10, 1938, having been referred by Drs. Belmont and Rupert Helsabeck of King, North Carolina.

CHIEF COMPLAINT: Pain in the abdomen for two weeks.

FAMILY HISTORY: Irrelevant.

PAST HISTORY: Normal birth and development. Usual childhood diseases. Generally exceptionally healthy and robust. No operations or injuries.

PRESENT ILLNESS: About two weeks before admission the patient complained of occasional generalized abdominal pains. She continued at school, but ate poorly and did not play as actively as common. One week before admission the pains became considerably worse and there was nausea and vomiting. At this time her temperature was 101 F. (38.6 C), and there was slight stiffness of the neck, which was thought to be meningismus. General physical examination was normal except for the above, and slight generalized abdominal tenderness. Within a day or two the temperature became normal and the child returned to school. Three days before admission all of the above symptoms became decidedly worse and the temperature was found to be 103.8 F. (40 C). There was no headache or earache and the ears, nose, and throat were normal except for slightly enlarged tonsils.

PHYSICAL EXAMINATION: T. 103.8 F. (40 C), P. 96, R. 20, B.P. 100 mm. mercury systolic; 60 mm. diastolic. The patient was obviously gravely ill, lying on her side in opisthotonic position, her eyes shielded from the light, delirious and slightly cyanotic. The neck was quite stiff. There was slight generalized lymphadenopathy and exquisite tenderness over the lumbar spine. The tonsils were enlarged and infected. Heart and lungs were normal. There was slight generalized abdominal tenderness, but no masses or localized tenderness. Carnial nerves were normal except for choking of the optic discs to two diopters. The tendon reflexes were over-active but equal. Kernig's sign was present right and left grade IV.

ACCESSORY CLINICAL DATA: Leucocytes 38,250, Polymorphonuclear 96%, mainly adult forms, Lymphocytes 4%, Red Blood Cells 4,070,000, Hgb. 61% or 15.5 gms. (Sahli). Spinal fluid 60% solidly purulent material. The first cell count possible was 65,000—P.M.N. 99%. L. 1%.

IMPRESSION: Meningitis of some type. Due to marked tenderness over the lumbar spine and signs of meningitis along with abdominal pains, Pott's disease was considered; but the x-ray was negative. Spinal puncture reavealed thick, tenacious, purulent fluid. Smear showed Gram positive cocci. Culture showed pure growth staphylococcus aureus. The patient rapidly lapsed into unconsciousness.

TREATMENT: Realizing from past experience the futility of treating cases of staphylococcus meningitis it was decided to use certain precedures, which, in the average case of meningitis, have always been thought radical and injudicious. With the idea in mind of providing adequate drainage, frequent spinal punctures were done. For the first four or five days it was necessary to irrigate the subarachnoid space with a warm solution of normal saline, because of the fact that the spinal fluid was too thick to drain through a large spinal puncture needle. This irrigation was accomplished by gently washing in and out by means of a 20 cc. syringe. The sixth hospital day a number 8 ureteral catheter was introduced through a canula into the lumbar subarachnoid space. The canula was then withdrawn, leaving the ureteral catheter in place to provide constant drainage. At this stage the fluid was too thick to drain and the catheter was hopelessly plugged up after eight hours. Frequent spinal punctures with irrigation were subsequently employed. In spite of normal otoscopic findings by several examiners it was decided to perform bilateral myringotomy. On the fifth hospital day the left eardrum was incised and a large amount of pus was obtained containing organisms identical with the spinal fluid cultures. Prontosil was given in large amounts intramuscularly through the first four hospital days, and after this 40 grains of sulfanilamide daily was given by mouth for one week. Seven blood transfusions of 200 to 300 cc. citrated blood were given. Also staphylococcus antitoxin (Lederle) was given as follows: intrathecally, 60,000 units; intravenously, 100,000 units; and intramuscularly, 45,000 units, in divided doses.

The thickly purulent spinal fluid soon became thin enough to drain through a large needle and, with the use of antitoxin intrathecally, cultures became negative in two weeks. The antitoxin was also washed back and forth in the subarachnoid space following saline irrigation, and the patient was placed in Trendelenberg's position for twelve hours after the antitoxin was introduced.

The child's recovery was remarkably rapid. She was able to take food, fluids, and medication by mouth after the fourth hospital day. She was discharged from the hospital June 7, 1938. The only residuum was mental confusion which was extreme, but which seemed to improve gradually, until one month after discharge she was apparently normal and, in fact, exceptionally bright. Upon her return home she developed successively pyelitis, severe tonsilitis, and broncho-pneumonia, from each of which she made a good recovery. She remembers not one detail of her hospital experience.

This patient must be accepted as a case of staphylococcus meningitis completely cured, since she has no demonstrable sequelae, has made one and one-half years in school with honors, and was presented personally to the regular October meeting of the North Carolina Baptist Hospital in obvious robust good health, eighteen months after her illness.

...THE BULLETIN BOARD...

PRESIDENT'S LETTER

With the launching of the State Society's official Journal, I wish both the editor and the Journal a happy voyage. The interest and cooperation of our members in the venture seem assured. The importance of medical journalism in modern medical practice is too evident to need elaboration. In school we studied books, in practice we study journals; the better the journals, the better practitioners we are. Whenever we become too busy to report our own experience or too lazy to learn from the experiences of our fellow workers, then we deserve nothing better than the mediocrity which will inevitably overtake us.

William Allan.

SECRETARY'S MESSAGE

Our Society has lived well within its budget for 1939. All obligations for the year have been met, leaving the most comfortable balance in our history.

Likewise our membership has reached its highest peak. However, there are still over four hundred physicians in North Carolina who are not members of organized medicine. We feel that the Society needs them within its fold and that, with the cloud of socialized medicine above the horizon, our ranks present the only protection to medicine today. To those who are not now members of our State Medical Society we extend a cordial invitation.

T. W. M. Long.

Carolina's New Medical Laboratory and Public Health Building

On December 4 the new Medical Laboratory and Public Health Building at the University of North Carolina in Chapel Hill was formally dedicated. The new building, of Georgian architecture and representing a total outlay of approximately $450,000, was made possible by a legislative appropriation and a PWA grant. There are five full floors and a sub-basement which house the Division of Public Health and the Departments of Pathology, Bacteriology, Pharmacology, Physiology, Anatomy, and Biological Chemistry. In addition there are an auditorium with a seating capacity of approximately 200, a beautifully designed medical library, and modernly equipped animal quarters.

In connection with the new Medical Building there is a dormitory nearby which houses the majority of the medical and public health students. As a part of the original legislative and PWA grant, a new wing has been added to the University Infirmary for the development of a small medical dispensary in connection with the teaching of physical diagnosis in the Medical School.

At the morning exercises on December 4, presided over by Dean R. B. House of the University, greetings were brought to the school from President F. P. Graham; Dr. I. H. Manning, Emeritus Professor of Physiology, and for many years Dean of the Medical School; Dr. William Allan, President of the State Society; Dr. Carl V. Reynolds, of the State Health Department; Dr. C. C. Carpenter, Dean of the Wake Forest Medical School; and Dr. W. C. Davison, Dean of the Duke Medical School. The main address of the morning was made by Dr. E. K. Marshall, Professor of Pharmacology at the Johns Hopkins School of Medicine, on the subject, "Medical Research—The Story of Sulfanilamide."

At the afternoon session Dr. David Riesman, Professor Emeritus of Clinical Medicine and Professor of the History of Medicine at the University of Pennsylvania School of Medicine spoke on "The Making of a Clinician." Dr. G. Canby Robinson, Lecturer in Medicine and Director of the Medical Clinic at Johns Hopkins, spoke on "The Application of Medical Science to the Individual."

Approximately 250 alumni and friends of the Medical School attended a banquet at the Carolina Inn in the evening, at which Dr. William Coppridge of Durham was toastmaster. The principal address was made by Dr. Boudreau, Executive Director of the Milbank Memorial Foundation, on, "New Health Frontiers." In addition, short talks were made by Mr. Victor S. Bryant of Durham for the Trustees' [illegible] Committee; Mr. Stanley H. Wright of the [illegible] John C. Tayloe of Washington, President of [illegible] Medical Alumni Association; Dr. J. K. Hall of Richmond, representing the Whitehead era of the school; and Dr. W. deB. MacNider.

News Notes from Duke University School of Medicine

On October 14, Dr. Marvin A. Stevens, of the Yale University School of Medicine, held a clinic on athletic injuries.

From October 19-21 the Annual Post-Graduate Symposium on Diseases of the Lungs and Thorax was held, in which the following participated: Dr. Edward D. Churchill, Dr. Frederick T. Lord and Dr. Maxwell Finland, of the Harvard Medical School; Dr. Daniel M. Brumfiel, of Trudeau Tuberculosis School, Saranac Lake, N. Y.; Dr. Chester A. Stewart, of the University of Minnesota School of Medicine; Dr. Edward N. Packard, of the New York State Hospital for Incipient Tuberculosis, Ray Brook, N. Y.; Dr. Cameron Haight, of the University of Michigan; Dr. William DeW. Andrus, of Cornell University; Dr. Isaac A. Bigger of the Medical College of Virginia; Dr. Charles R. Austrian and Dr. William F. Rienhoff, of The John Hopkins University School of Medicine;; Dr. Dickinson W. Richards Jr., of Columbia University College of Physicians and Surgeons; ;Dr. Stuart W. Harrington, of Mayo Clinic; Dr. Daniel C. Elkin, of Emory University School of Medicine and Dr. Gabriel Tucker, of the University of Pennsylvania School of Medicine.

On October 21 the Baltimore-Washington Dermatological Society met at Duke Hospital.

On October 25 Dr. William Allan, President of the North Carolina Medical Society gave an illustrated lecture on Heredity and Disease.

On November 14 Dr. Harvey B. Stone, Associate Professor of Surgery of The Johns Hopkins University School of Medicine, held a surgical clinic.

On December 16 Mr. Charles C. Thomas, Publisher, of Springfield, Ill., and Baltimore, Md., held a clinic for the staff and students on Medical Publications.

On the above date the autumn quarter ended, with eighteen seniors completing the medical course, all of whom have obtained internships commencing January 1, 1940.

The Bowman Gray School of Medicine of Wake Forest College

Announcement of the expansion of the present Wake Forest Medical School to offer the complete four year course, granting the M.D. degree, was made on August 6, 1939. This was made possible by funds received through the Bowman Gray Foundation and by the hospital facilities of Winston-Salem, plus the present resources of the two-year school. On November 22, 1939, the trustees of the college voted to give it the name of The Bowman Gray School of Medicine of Wake Forest College, when it moves to Winston-Salem.

Northup and O'Brien of Winston-Salem have been selected as architects, and plans are rapidly being developed for the construction of the medical school building and the additions to the Baptist Hospital. Construction will begin in early spring, and it is hoped that it will be completed by the opening of school in September, 1941. Whether clinical instruction will be added by that time will depend on how rapidly the hopitals can be placed professionally on a teaching basis.

The policy of the school will be to offer the most modern type of instruction to a selected num [illegible] students of ability and character. The [illegible] be limited to fifty each. A special ef [illegible] be made to provide an opportunity for a [illegible] education to students from the rural districts of North Carolina, using every encouragement to induce them to go back to their home community for the practice of medicine.

Medical Society of South Carolina Sesqui-Centennial

On December 5, 1939, the Medical Society of South Carolina celebrated the sesqui-centennial anniversary of its founding. The celebration was held in Charleston, where the Society was founded in 1798 by a group of physicians under the leadership of Drs. Peter Fayssoux, Alexander Baron, and David Ramsay. It was the first permanent medical organization in Charleston, and for a long time was the only medical organization in South Carolina. Under its auspices were established a Medical College—now the Medical College of the State of South Carolina—and two medical journals, the "Carolina Journal" and the "Southern Medical and Surgical Journal". Other projects sponsored by the Society included a Botanical Garden, the purchase of an apparatus for the resuscitation of drowned persons, and the recording of weather observations. In 1848 a convention called by the Society formed the South Carolina Medical Association, of which the Medical Society of South Carolina became a constituent member. Dr. James Moultrie was the first president of the new organization, and was later elected President of the American Medical Association.

The program for the sesqui-centennial celebration began with a reception at the Gibbes Art Gallery, where an exhibit of paintings, books, and other material related to the early history of the Medical Society of South Carolina was opened. This was followed by a banquet at the Francis Marion Hotel. Addresses of welcome were given by the Hon. Henry W. Lockwood, Mayor of Charleston, and the Hon. Burnet R. Maybank, Governor of South Carolina. A Tablet from the South Carolina Medical Association was presented to the Society by Dr. William Weston, and Dr. Douglas Jennings, president of the Association, brought greetings. "An Historical Sketch of the Medical Society of South Carolina" was given by the president, Dr. James J. Ravenel. Dr. Nathan B. Van Etten, President-Elect of the American Medical Association, spoke on "An American Health Program"; and Dr. Francis R. Packard, Editor of the ANNALS OF MEDICAL HISTORY, spoke on "Scientific Links between Charleston and Philadelphia in the Eighteenth Century".

North Carolina Pathological Society

The North Carolina Pathological Society held its annual meeting at the City Memorial Hospital in Winston-Salem on December 12 at 2:30 p. m. The program included papers on: "Possible Relation Between Hodgkin's Disease and Brucellosis", by Dr. Wiley D. Forbes, Professor of Pathology, Duke University; "The Effect of Renal Injury upon the Regeneration of Plasma Proteins", by Dr. Russel D. Holman, Associate Professor of Pathology, University of North Carolina; "Illustrative Cases of Unusual Positions of Malignancies", by Dr. L. C. Todd, of Charlotte; "Case Reports", by Dr. T. T. Frost, Pathologist to the City Memorial Hospital, Winston-Salem.

Officers elected for the year 1940 were: President, Dr. L. C. Todd, of Charlotte; vice-president, Dr. W. M. Summerville, of Charlotte; secretary, Dr. C. C. Carpenter, of Wake Forest.

Forsyth County Medical Society

The annual business meeting of the Forsyth County Medical Society was held as a dinner meeting at the Robert E. Lee Hotel Winston-Salem, on December 12, at 6:30 p. m. Dr. Kenneth Lynch, Professor of Pathology at the Medical College of South Carolina, spoke on "Pancreatitis," The following officers were elected for the year 1940: Dr. B. B. Pool president, succeeding Dr. Beverly N. Jones; Dr. V. F. Couch, first vice president; Dr. Fred Garvey, second vice president; Dr. P. A. Yoder, secretary; Dr. Robert McMillan, treasurer; Dr. J. P. Rousseau, member board of censors; Dr. B. N. Jones and Dr. V. M. Long, delegates to the state medical society, with Dr. P. A. Yoder, Dr. S. D. Craig, Dr. V. C. Lassiter, and Dr. S. W. Rankin as alternates.

Buncombe County Medical Society

The Buncombe County Medical Society held two meetings in December. On December 4, at 8:00 p. m., the society met at the City Hall in Asheville. A paper, "Urgent Surgery on Infants", was read by Dr. F. Webb Griffith, and a case report, "Primary Bronchogenic Carcinoma", by Drs. Margery Lord and Donald MacRae, was given. On December 18, at 6:30 p. m., the society held its annual meeting and banquet at Grove Park Inn.

CALDWELL COUNTY MEDICAL SOCIETY

The Caldwell County Medical Society at its regular meeting on December 19, was entertained by Dr. Verne H. Blackwelder at his residence on South Mulberry Street, with a delicious turkey dinner and all the trimmings.

A full attendance was recorded and an enjoyable evening was had by all.

The following officers were elected for 1940:

President, A. A. Kent, Jr., Granite Falls, N. C.; vice-president, L. M. Fetner, Lenoir, N. C.; secretary and treasurer, Douglas Hamer, Lenoir, N. C.; delegate to state medical society, C. R. Hedrick, Lenoir, N. C.; alternate G. R. Russell, Granite Fall, N. C.

WARNING TO OCULISTS

A letter has come from Dr. Herbert C. Kimberlin of Trenton, Missouri, requesting that we publish a warning to the oculists of North Carolina about a crook who has been operating in Missouri and North Carolina. His practice is to pose as a farmer desiring to have glasses fitted, and to pass a check for $30.00—usually with a notation for chicken or livestock—asking for change. He does not call for the glasses. The signature and endorsement are forged. He has used the names W. C. Curran, J. B. Powers, W. C. Cursey, and others. Dr. Kimberlin describes him as being about five feet nine or ten inches tall, about 155 pounds, with light sandy hair, blue eyes, and a smooth shaven, ruddy complexion. He is also described as having a sandy complexion and reddish-brown hair, and weighing about 170 pounds. He gives his age as 43 to 49. One oculist who examined his eyes reported the following findings: Pupils small; distant vision, right and left, 20/16 minus with a correction of only one quarter diopter astigmatism; axis 86 in right; in left the same amount of astigmatism, axis 80. Pupilary distance, 64 mm.; temple, 4½; length, 6¼; bridge height, 2/16; bridge forward, 1/12.

This man has operated in Missouri for a number of years, and, in October, 1939, appeared in Gastonia, N. C. Oculists are asked to be on the look out for him, and, should they be given a check by such a person, to notify the Sheriff of Nodaway County, Maryville, Missouri, or the Sheriff of Grundy County, Trenton, Missouri, or Dr. Herbert C. Kimberlin, Trenton, Missouri.

The Professional Man's Not a "Clock-Watcher."—He does not count on regular hours. He realizes when he takes up the study of medicine that his sleep will often be interrupted, that his time will not really be his own, and he rejoices to feel that he may be called upon when others are in need regardless of his own comfort. One other point of distinction may be mentioned, and that is the principle as laid down in the Hippocratic oath that he will teach this art to others if they wish to learn it "without fee or stipulation." The physician, and indeed any professional man, should emulate the Clerk of Canterbury Tales of whom Chaucer said: "And gladly would he learn and gladly teach." Winfred Overholser: The Broadening Horizons of Medicine, Science, 90:2338 (Oct. 20) 1939.

WOMAN'S AUXILIARY

Officers

President: Mrs. C. F. Strosnider, Goldsboro.
President-Elect: Mrs. C. R. Hedrick, Lenoir.
First Vice President (Organization): Mrs. Joseph A. Elliott, Charlotte.
Second Vice President (McCain Bed): Mrs. Alfred A. Kent, Jr., Granite Falls.
Third Vice President (Loan Fund): Mrs. R. A. Moore, Winston-Salem.
Chairman of Past Presidents: Mrs. P. P. McCain, Sanatorium.
Corresponding Secretary: Mrs. Jack Harrell, Goldsboro.
Treasurer: Mrs. C. E. Judd, Raleigh.
Recording Secretary: Mrs. J. D. Freeman, Wilmington.
Chairmen of Standing Committees:
  Mrs. Frederick R. Taylor, High Point, Program.
  Mrs. R. S. McGeachy, New Bern, Research.
  Mrs. Isaac Manning, Chapel Hill, Memorial.
  Mrs. William Earl Overcash, Southern Pines, Hygeia.
  Mrs. Sidney Smith, Raleigh, Press and Publicity.
  Mrs. James Buren Sidbury, Wilmington, Public Relations.
  Mrs. C. E. Howard, Goldsboro, Scrap Book.
  Mrs. G. Erick Bell, Wilson, Historian.
  Mrs. C. D. Thomas, Sanatorium, Exhibits.
  Mrs. Hamilton W. McKay, Charlotte, Legislature.
  Mrs. Thomas Leslie Lee, Kinston, Jane Todd Crawford Memorial.
Councillors:
  First District: Mrs. H. D. Walker, Elizabeth City.
  Second District: Mrs. John C. Tayloe, Washington.
  Third District: Mrs. J. S. Brewer, Roseboro.
  Fourth District: Mrs. M. A. Pittman, Wilson.
  Fifth District: Mrs. W. T. Rainey, Fayetteville.
  Sixth District: Mrs. Ben Lawrence, Raleigh.
  Seventh District: Mrs. Harry Winkler, Charlotte.
  Eighth District: Mrs. Wm. P. Knight, Greensboro.
  Ninth District: Mrs. J. W. Vernon, Morganton.
  Tenth District: Mrs. W. C. Johnson, Canton.
Advisory Board:
  Dr. Hubert Haywood, Raleigh; Dr. S. D. Craig, Winston-Salem; Dr. W. H. Cobb, Goldsboro.

A MESSAGE TO THE MEMBERSHIP OF THE AUXILIARY FROM ITS PRESIDENT

In thinking out my plans and policies for the Auxiliary to the Medical Society of the State of North Carolina for 1939 and 1940, I realize that I am intrusted with the responsibility of carrying forward the same ideals and high purposes that were born into the organization 16 years ago when it came into being April 18, 1923, in Asheville with Mrs. P. P. McCain as president. It is my sincere desire to be guided by these same principles during my administration, interpreting them in the light of modern needs.

What we accomplish this year depends upon the energy and enthusiasm of the local auxiliaries, and what you do as an individual. The slogan for the state officers is: "Know your Job and Take Pride in Doing It." The state officers are well informed on their duties, are unselfish, faithful workers, and stand ready to help any auxiliary or auxiliary member that calls upon them. And may I urge the auxiliaries to ask them for help whenever aid is needed. I call on each of you to help earnestly to make 1939 and 1940 a most successful year! From time to time, I shall ask you to do specific things, but I am counting on you individually and collectively to support our philanthropies, to increase our membership, and to be informed.

In fact, my motto for the year is "Be Informed and Inform Others". By this I mean:

- *Know* the objectives of our auxiliary—they give us noble ends to attain.
- *Know* the history of our organization, which gives us pride in its splendid accomplishments and inspiration for future work.
- *Know* the health laws passed by the 1939 legislature and what is your part in seeing that they are enforced.
- *Know* how to discuss socialized medicine intelligently in informal groups.
- *Know* why the Wagner Bill or its substitute if made into law, will not be for the best interest of the doctor or the public.

These last three suggestions give us an opportunity to perform a much needed service.

Realizing that the Auxiliary to the Medical Society of the State of North Carolina has a big work to do, I am most anxious to increase our membership greatly this year; the bigger the membership, the bigger the job we can do. Last year Mrs. Elliott had for her slogan "Every Doctor's Wife a member of Either County or District Auxiliary". This is a good slogan, so I am keeping it this year, hoping it will be fulfilled; for I would like to say personally to each doctor's wife, "The Auxiliary needs you and you need the Auxiliary". If every doctor's wife knew the aims and ideals of the Auxiliary; if she knew the need for the work the Auxiliary is doing; if she knew the worthy people without means that are nursed back to health on the McCain Bed, or the doctor's children who have been aided at college by the Student Loan Fund; if she knew the necessity for being properly informed on socialized medicine, health bills, etc.; if she knew the satisfactory friendships that are formed in auxiliary work, and the good times that are enjoyed at the local and state auxiliary meetings; if she knew how her dollar was needed and spent, I believe every doctor's wife would want to become an auxiliary member. My plea is to spread this information and double the 1939 membership, which was 435. Remember that the organization started with a membership of 53 in 1923. I so hope every eligible doctor's wife will come into the fold before March 15, 1940.

To stimulate interest in securing a full membership this year I am offering a prize of $5.00 to be awarded to the district obtaining the greatest number of dues, on a percentage basis, by May 1, 1940. The district which receives the $5.00 will in turn present it to the McCain Endowment Fund. Will you help your district win this honor?

As you know, we have two philanthropies which the Auxiliary sponsors, and which are doing a very worthwhile work. The first of these, the McCain Bed, was started in 1929 when Mrs. R. S. McGeachy was president. The occupants of this bed are doctors, their children, nurses, and other worthy persons without funds, who are ill with tuberculosis. Our purpose is to restore them to health and usefulness. Ten patients have used this bed since it came into being. Funds for carrying on this good work come from 50 cents of the dollar dues paid into the Auxiliary. May I state here that of the other 50 cents of the dues, 25 cents goes to State Headquarters for expenses, and 25 cents to the National Headquarters. To be sure of this expense money for the McCain Bed, and to make the bed a permanent project easily financed, the Auxiliary, in 1935, started an endowment fund of $10,000. In May, 1938, a little over $1,000 of this money had been raised. Please help toward this goal by securing as many subscriptions to *Hygeia* as you can and sending them to Mrs. K. B. Pace, State *Hygeia* Chairman, Greenville, N. C. The profit that the Auxiliary gets from these subscriptions is turned over to the McCain Bed Endowment Fund. And in this fund you have a chance to win another honor. Mrs. Kent, State Chairman of the McCain Bed, is offering a $5.00 prize to the district raising the largest amount of money for this purpose. You will hear personally from Mrs. Kent in January.

I also hope you will be most interested in raising money for the Student Loan Fund. Mrs. R. A. Moore, Chairman of the Student Loan Fund, is offering a prize of $5.00 for the district making the largest contribution to this fund. This goal is also $10,000. The money, as you remember, is used to make loans to doctors' children in their junior and senior years at college. Since its organization in 1930, six loans have been made. Mrs. Moore has already mailed out a most instructive and appealing letter for this cause.

My message to you about what has been done this year is very encouraging. We started off with a most interesting board meeting with Mrs. McCain on October 12, 1939. Mrs. McCain entertained in her usual charming and informal manner. The happenings were interesting and vital to the life of our organization. I shall not take the space to tell you about the business taken up, but please read about it in the minutes which will be printed later on in the journal. I am very happy to tell you that under Mrs. R. S. McGeachy's leadership and at a lovely luncheon she gave in New Bern, a new auxiliary of 13 members was formed on November 2, 1939, with Mrs. McGeachy as president and Mrs. Barker as secretary. On December 13, I attended a joint meeting of the Medical Society and Auxiliary in Clinton, in Mrs. Brewer's district. It was a most friendly and interesting meeting—a dinner meeting with the doctors and an Auxiliary business meeting in the home of Mrs. J. S. Ayers afterwards. They are now engaged in getting subscriptions for *Hygeia*, and have their plans all made for a money-making project for the McCain Bed in January. I am sure that there are many other interesting things happening over the state, but I haven't, as yet, had a full report from them.

As a final request, may I ask you to get a copy of *Industrial Medicine and Surgery* for the month of October, 1939, and read the article on "Socialized Medicine" (page 423) by Dr. Webb Griffith of Asheville. This is an excellent article on the subject and will certainly familiarize everyone with the Wagner Bill.

I am sure that you, as an auxiliary, are as grateful to the Medical Society for this space in their MEDICAL JOURNAL as I am, and I hope you will form the habit of reading our material from month to month. I expect to have articles that will be pertinent to our organization, concerning its history, the work we are doing, plans for future work, and special articles concerning the McCain Bed, Student Loan Fund, duties and work of special committees, etc. I also hope we can give part of this space to items of interest from different auxiliaries.

(Signed) ANNA L. STROSNIDER
President of the Auxiliary to
the Medical Society of the
State of North Carolina.

In Memoriam

RESOLUTIONS OF RESPECT ON THE DEATH OF DR. L. B. McBRAYER*

We, your committee appointed at the Louisville meeting to formulate resolutions of respect on the death of Dr. L. B. McBrayer, desire to submit the following—

That whereas, an All-wise Providence has seen fit to call our beloved leader and fellow-crusader, Dr. Louis Burgin McBrayer, to his eternal rest on April 1, 1938,

And, whereas, those of us who are left behind realize fully the enormous loss sustained in his passing by his family, his friends, the North Carolina medical profession, the North Carolina Tuberculosis Association, and the National Tuberculosis Association, as well by the almost limitless other organizations and individuals with whom he was associated and with whom he labored long and so successfully,

Be it therefore resolved: that we give most sincere thanks to our Heavenly Father for this long and useful life which was spent by our friend among us; for his outstanding career of leadership in so many fields; for his innumerable qualities of the highest type of ability in such a wide-spread area of service to humanity; and above all, for his matchless knack of being able with his leadership to inspire and stimulate his followers and students to efforts which otherwise they would never have been able to make.

And be it further resolved: that a copy of these resolutions be inscribed in the minutes of this Conference, and that copies be furnished the family of Dr. McBrayer, the North Carolina and the National Tuberculosis Association, and to the press.

Respectfully submitted,
(Signed) Paul A. Yoder, Chm.
Paul H. Ringer,
Arthur T. McCormick.

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*Adopted by unanimous vote at the annual meeting of the Southern Tuberculosis Conference at Charleston, S. C., October 6, 1939.

DR. HENRY BASCOMBE WEAVER

Our Buncombe County Medical Society grieves over the loss on February 13, 1938, of its oldest member, Dr. Henry Bascombe Weaver. Tempered, it is true, by the full measure of his years and his honors, our grief is none the less a real sorrowing; it carries a sense of finality in that his passing breaks the last link that connected us with a past already remote.

As in his life were united eighty-six years of time that completely bridged an intervening and universally recognized era, so in his personality and in his practice Dr. Weaver blended the social habits and the trends of professional thought of three eras. In a word, he was always abreast of the times.

He was born into a family of peculiar longevity, of prominence and wide connections, born into a world of pioneering, of horse-back trails and felling forests. At an early age he got the best education, both secular and professional that the times afforded. In the seventies and eighties of the last century he carried his heritage of culture and his professional skill into every corner of the near-wilderness that is now Yancey, Mitchell and Avery Counties. In the early nineties he came to the rising city of Asheville, where for nearly fifty years he dispersed with unobtrusive gentleness and wisdom that undescribable commodity we know as General Medicine. In the nineties he was a member of the young State Board of Medical Examiners which he had helped to bring into being.

He was a reader and a student, and gifted with an active mind that kept him in touch with progress to the end. An admirable trait was the freedom with which he drew upon opinions and skill he considered more expert than his own by consultation.

This sketch would not be complete without a word as to his loyalty to the land that bore him. Second only to the love of his profession was his love of his farm and the music of his hounds.

To the end that his long life of loyalty and service may be an inspiration and a challenge to younger generations, we move, Mr. President, that a page of our minutes be devoted to this tribute to his memory.

(Signed) G. S. Tennent, Chairman
Chas. Hartwell Cocke
Charles C. Orr.

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DR. JOHN D. KERR

Dr. John D. Kerr, Jr., a native and life-long resident of Sampson County, N. C., died in James Walker Memorial Hospital, Wilmington, N. C., on March 14, 1938. Death was the result of injuries received in an automobile accident.

Doctor Kerr was born on the old Kerr plantation on Black River in the lower part of Sampson County in 1884. He was the son of John D. Kerr and Susan Hubbard Kerr. In 1893 the family moved from the plantation to Clinton, where the father engaged in the practice of law until his death in 1923.

Doctor Kerr attended public school in Clinton, and the Wright Academy near the forks of Coharie in lower Sampson. Later he attended the University of North Carolina, and then the University of Maryland. From the latter he was graduated as a Doctor of Medicine in 1908.

After serving an internship in a hospital at Rocky Mount, N. C., Doctor Kerr returned to Clinton and started in general practice. In 1910 he married Miss Lovie Pickford, also of Clinton, and to this union were born six children—three boys and three girls.

In April, 1917, Doctor Kerr entered the military service as a first lieutenant in the Medical Corps of the United States Army. He served at Camp Sevier, South Carolina, and later with the Thirteenth Division in France. After the close of the war he returned to this country, and was discharged with the rank of captain. He again took up the practice of medicine in Clinton, but retained his interest in military affairs. In 1923 he was appointed assistant surgeon of the 106th Medical Regiment, North Carolina National Guard, with the rank of lieutenant-colonel. This position he held until the time of his death.

Doctor Kerr was a member of the State Medical Society, the Independent Order of Odd Fellows, the American Legion, and the Presbyterian Church. He was given military rites of burial, the funeral being held from the home on March 17, 1938.

In the passing of Doctor Kerr the state of North Carolina lost one of its most valued and best-beloved men of medicine. As a doctor he was idolized by his patients and held in the highest respect by his colleagues.

(Signed) V. R. Small
O. L. Parker,
Committee,
Sampson County
Medical Society.

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At a meeting of the Guilford County Medical Society held June, 1939, the following tribute, offered by Dr. Brockton R. Lyon, was unanimously adopted:

WASHINGTON JEHU MEADOWS, M.D.

It is with profound sorrow that we are called upon to record the death of Dr. Washington Jehu Meadows, a member of this society for many years, which occurred at St. Leo's Hospital on April 21, 1939, from a cerebral hemorrhage.

Dr. Meadows was widely known, and expressions of highest praise for the man and deepest grief on account of his death have been universal.

But mortal memory is a shadow which quickly fades. Therefore, that those who come after may know something of the details of his career, and the esteem in which we as brother members of his profession held him, it is our desire that an enduring record be presented in the archives of this society.

Dr. Washington Jehu Meadows, son of Warner William and Mary Hubbard Meadows, was born in Chambers County near Lafayette, Alabama, on the 29th day of December, 1871. His early education was obtained in the Chambers County Schools, followed by his graduation from Lafayette College in 1891. He then attended Alabama Medical College at Mobile and was graduated with the degree of Doctor of Medicine in 1894. For several years he practiced in Longdale, Alabama, which was followed by a year of post-graduate study in New York City. Dr. Meadows then moved to Greensboro in the spring of 1898, and continued the active practice of medicine until his death.

In 1895, he married Minnie Pinkard, of Clanton, Alabama. This union was blessed with two children who survive him: a daughter, Marguerite Meadows McKee, and a son, Julian Meadows. His brother, Dr. Willis H. Meadows, his sister, Mrs. Dora Still, and his granddaughter Jean Evans McKee, also mourn his loss.

Dr. Meadows dedicated himself completely to the practice of his chosen profession, although in his busy life he enjoyed social companionship and found time for helpful activity in the civic and religious life of his chosen city of Greensboro. He efficiently served as President of the Guilford County Medical Society, and gave unstintingly of his skill and wisdom while serving on the staffs of the various local hospitals.

Our lamented member and friend was most energetic and progressive, always showing a helpful and friendly interest in the younger men who were entering practice—absorbing new ideas and new methods from them and giving them the benefits of a wisdom which could come only from long and broad experience.

Dr. Meadows applied himself most intensively to his practice, and his assiduous industry might make his name synonymous with "hard work", unless we agree with Sir James Barrie: "Nothing is really work unless you would rather be doing something else". Dr. Meadows loved the practice of his profession so greatly that. measured by Barrie's standard, his tremendous activity could not have been "work" to him because there was nothing that he liked to do more.

In addition to being blessed with a powerful physique and an active and capacious mind, he had a way of winning people to him, and during his more than four decades of practice in this community, there were few homes that were not graced by his presence at one time or another.

We feel keenly the loss of so great a friend. His character and his ideals will ever be an inspiration in strengthening and expanding our professional activities.

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DR. JOHN B. WATSON

By Hubert A. Royster, M.D.

Dr. John Blois Watson was born January 2, 1885, in Raleigh, N. C., the son of James R. and Lizzie King Watson. His grandfather was Dr. David Watson, and his great grandfather Dr. Robert Watson, both of Chatham County, N. C.

After studying pharmacy and practicing as a druggist for some years he entered the University of North Carolina Medical School and graduated at Raleigh with the class of 1908. He served an internship at St. Leo's Hospital in Greensboro, N. C., and located in Raleigh for the practice of his profession.

In 1912, 1915, and 1916 Dr. Watson took special courses in infant feeding, physical diagnosis, and clinical medicine at the New York Post-graduate Hospital. In addition to his private practice he taught pharmacy and pharmacology at the old Leonard Medical School for Negroes at Shaw University in Raleigh, and was a member of Rex and St. Agnes Hospital staffs. On December 27, 1920, he was married to Miss May Greenfield of Kernersville, N. C.

Dr. Watson was a Mason, a member of the Raleigh Academy of Medicine, the Wake County Medical Society, the North Carolina Medical Society, the Southern Medical Association, and the American Medical Association.

In 1929 he developed a septic endocarditis which so impaired his health that he was obliged to give us his practice. On July 15, 1938, he died in Raleigh.

This bare outline of Dr. Watson's comparatively short life by no means gives a complete or even adequate conception of his character and his attainments. He was a steadfast, reliable friend and companion. His career as a pharmacist, which finally led to his desire to study medicine, was built upon scientific rather than commercial instincts. The writer can testify to his success as a medical student. He was ardently interested, accurate in his thought, and ambitious to excel. A general average of ninety-two attained by him throughout his medical course was sufficient evidence of his studious habits and his application to work.

In his practice Watson was especially interested in gastro-enterology, and advanced to a high degree of efficiency in that branch of medicine. He was, however, a well-rounded medical man, skliled in diagnosis and therapeutics. Whenever consultation was needed, no matter what the type of case, he was ever prompt to call upon his associates. It is known that patients with intussusception and strangulated hernia owe their lives to his having referred them for assistance within the hour of recognition; and at least two women are living today, twenty years after operation for cancer of the cervix, due to Dr. Watson's early diagnosis and his immediate reference of their cases.

Of a kind, sympathetic disposition, Dr. Watson was beloved by his patients and his friends. Naturally he was conservative, quiet and ever reserved in manner, but was always genial and communicative to his intimates. On account of his prolonged period of ill health and his consequent early retirement, he was known to few of his younger colleagues. His contemporaries and his teachers will remember him with admiration and regret his untimely passing.

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DR. ROBINETTE BURNS HAYES

Dr. Robinette Burns Hayes was born on January 10, 1877, at Hillsboro. He was the son of William A. Hayes and the former Susan Burns Beard. He attended private schools at Hillsboro, and became a licensed pharmacist in North Carolina and Georgia. Later he took up medicine, and graduated at the University of Maryland Medical School in 1906, as University Prizeman. He interned at the University of Maryland Hospital in 1906 and 1907. He practiced medicine in Baltimore from 1907 to 1910, and in Fayetteville, from 1910 to 1917. He joined the A.E.F. in 1917, and was discharged in 1919. While in the A.E.F. he attained the rank of captain. Leaving the army he took up the practice of medicine in Hillsboro, and did general practice there until the time of his death.

He was a member of the Durham Orange County Medical Society, the North Carolina Medical Society, the American Medical Association, the Theta Kappa Psi Fraternity (served as President in 1910), the American Legion, and the Saint Matthews Episcopal Church.

In 1910 he married Minnie Boyd Anderson, of Maryland. To this union was born one son, William Anderson Hayes, and one daughter, Agnes Robinette Hayes.

Dr. Hayes fulfilled the requirements of a real doctor. He knew the science of medicine and the art of medicine, and he practiced both of them. He had an innate sense of justice and of democracy which made him minister to the poor and needy without any regard for his own financial gain. He believed that a principle was worth fighting for; yet he was amenable to reason. He was a most courteous and kindly person.

To sum up—and we admit frankly that anything we write will be far short of the real Dr. Hayes—he was loyal to his friends, skilled in his profession, and firm in his convictions.

It is fitting to say here that the last illness he diagnosed was his own. Before his operation he told the doctors attending him just what he had. His diagnosis was completely confirmed at the operating table. He did not rally as he should following the operation. He realized that he was going to die, and he faced death as fearlessly as he had faced life. He died on July 16, 1938.

Submitted by:
S. D. McPherson, M.D.
Raney Stanford, M.D.
Bryan N. Roberts, M.D.

JACOB FRANKLIN HIGHSMITH

Jacob Franklin Highsmith was a builder. There is always in all civilized society a small minority which take the lead in creating, improving, building up, that life may be made better for themselves, their children and their fellow men. J. F. Highsmith was preeminently one of this minority.

He was born near Roseboro, North Carolina on September 1, 1868, the son of John J. and Mary Ann Fowler Highsmith of Sampson County. He entered Wake Forest College and took the regular course there; later he went to Jefferson Medical College where he graduated in medicine. He located in Fayetteville in October, 1889, and was engaged in general practice until 1906. In November, 1889, he married Mary Lou White of Sampson County. They had eight children: Dr. J. D. Highsmith, Mrs. E. J. Wells, Mrs. Annie Campbell, Mrs. Louise Hardy, Miss Juanita Highsmith, Dr. J. F. Highsmith, Jr., Dr. W. C. Highsmith, and Mrs. John Caldwell.

In his youth a man of dauntless ambition, he finished his course with most of these ambitions satisfied. He had achieved the front rank of his profession; he had administered relief and healing to untold thousands along the way; he had founded the first private hospital in his state and had sustained and moulded it into a great institution for the alleviation of human suffering; and at the same time he had been a vital part of his community in all its truer phases, religious, civic, political, and business.

Fewer men, if any, did more for the establishment of sound medical and surgical practice than did Dr. Highsmith. He served as president of the Cumberland County Medical Society, president of the North Carolina Medical Society and former member of its Board of Medical Examiners, and at the time of his death was president of the Tri-State Medical Society.

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DR. CHARLES TORRENCE NESBIT

Dr. Nesbit was born in Westernport, Maryland, in 1870; and he passed away at his home at Bradley's Creek near Wilmington, on October 10, 1938.

Dr. Nesbit received the degree of Doctor of Medicine at Baltimore Medical College in 1893 and interned in Bellevue Hospital in New York City. He also studied in Europe. He came to Wilmington in 1907 and did private practice here until he was elected as the first health officer of the Consolidated Board of Health of New Hanover County in 1911. After a constructive and successful term of office in this organization he went to Akron, Ohio, to become health officer in that city, where he served successfully until 1920.

Immediately following his service in Akron, Dr. Nesbit was commissioned as an officer in the United States Public Health Service and was assigned to duty in Des Moines, Iowa, where he specialized in nervous and mental diseases. In 1922 he resigned this position to engage in private practice in Chicago. He remained there until 1924, when he came back to Wilmington to resume his practice here, continuing the specialty of nervous and mental diseases.

Dr. Nesbit's work as health officer in New Hanover County was a tremendous undertaking from its beginning; but he had the knowledge, the ability, and the courage to carry it on successfully and to establish a strong foundation for its future development. At this point I can do no better than to quote in full the editorial appearing in the Wilmington Morning Star on October 11, 1938:

"Charles Torrence Nesbit was at once a scientist and a philosopher who practiced his profession according to his own mind and smiled with amusement at those who differed. As a health officer he left behind a lasting monument in the simple fact that he transformed Wilmington from an unsanitary shamble into one of the cleanest cities in the south. Incidentally he banished typhoid and similar maladies that spawned in filth and started Wilmington on the way to health consciousness. An astute gentleman he moved through life without ostentation and left behind him a record of constructive service".

It is a source of gratification to the many friends of Dr. Nesbit that he lived to see his plans for Wilmington's health program fulfilled. His heroic efforts to this end were rewarded by the accomplishment of his ideals, and the generation unborn when he began his work here are, with their children, reaping today the benefits of his faithful service.

A pioneer health officer in North Carolina, he won the esteem of his co-workers here and of the entire medical profession in this State as well as in Ohio. His achievements in the United States Public Health Service were outstanding, and he has left an example that may well be emulated.

Dr. Charles Torrence Nesbit's remains lie in Oakdale "where the winds and the sea sing his requiem and shall forever more"; but his name and his works will long be remembered in this community that he loved and served so faithfully and so well.

Committee:
John B. Cranmer, M.D.
Avon H. Elliott, M.D.
W. Houston Moore, M.D.

* * * * *

DR. W. C. ASHWORTH

Dr. Walter Clark Ashworth was born in Randolph County September 7, 1868, and died in the Wesley Long Hospital at Greensboro, N. C., on December 16, 1938. Funeral services were held at West Market Street Methodist Church in Greensboro by his pastor, Dr. J. B. Craven, and interment followed in Greene Hill Cemetery.

Dr. Ashworth took his course in medicine at the Ohio Medical College in Cincinnati and at the College of Physicians and Surgeons in Baltimore, Md. He did general practice at Kernersville, N. C., for eight years. He then became interested in mental and nervous diseases, and took special courses in this specialty at the New York Polyclinic.

He moved to Greensboro, N. C., in 1908 and established the Glenwood Park Sanatorium for Nervous and Mental Diseases and Drug Addictions, and was owner and manager of this institution at the time of his death. In 1904 he was married to Miss Berdie Sapp of Kernersville, who survives; and to this union two daughters, Mrs. Andrew Joyner of Greensboro, and Mrs. F. B. Morris, of Winston-Salem, survive.

Dr. Ashworth was a member and ex-president of this society, and a member of the North Carolina Medical Society, the Tri-State Medical Society, and the American Medical Association. None among us was more active in the work of these societies.

Your Committee on Obituaries begs leave to submit the following resolutions:

> That, whereas it has pleased Almighty God to call unto Himself, into that larger and better life, the soul of our beloved brother, Dr. Walter Clark Ashworth; and, whereas the removal of this our friend and brother from the sphere of his activities among us leaves a distinct sense of sorrow and bereavement,
>
> Be it resolved that we fellow members of the

Guilford County Medical Society, of which he was an active member and an ex-president, desire to give this fitting expression of our appreciation of his high character and of his long and devoted life of service in his chosen profession, and

Be it further resolved that these resolutions of respect be inscribed upon the permanent records of our society and that a copy be sent to his family and to the press.

(Signed) C. W. Banner
S. R. Cozart.

* * * * *

DR. A. C. EVERETT

By Dr. W. D. James

The death of Dr. Arey Covington Everett of Rockingham, December 26, 1938, was of major significance and sorrow among the physicians and people of Richmond County and throughout the state. In his passing there has been removed from our midst a physician, who for forty-one years typified and represented the pioneer doctor whose life and work was characterized by humility, sincerity, kindness, and faithfulness.

Dr. Everett was born in Laurinburg, November 20, 1873, and was educated at the famous Quackenbush School in Laurinburg and at Oak Ridge, and was graduated from the University of Maryland in Medicine in 1897. He practiced in Rockingham and its vicinity from the time of his graduation until his death.

The Richmond County Medical Society honored him with the office of secretary-treasurer for forty-one years. At each annual meeting for the election of officers, he would hand in his resignation, but this was never accepted. As secretary-treasurer of this organization for this length of time, his honesty, tact, and resourcefulness were never questioned. At various times he served as president of the County Society and of the Fifth District Medical Society, proving his ability as a leader. He was also a member of the North Carolina State Medical Society, the Tri-State Medical Society, the Southern Medical Society, and was a Fellow of the American Medical Association.

Dr. Everett came from a sturdy family with a rich heritage. His native and acquired qualities peculiarly fitted him for his profession. He had a strong, pleasing personality and a large, loving, courageous heart. He was always deeply interested in his practice of medicine, and ardently took the opportunity to help all who suffered. He was a friend to everyone. For prompt attention to calls, whether from rich or poor, none excelled him. The influence of his work is far-reaching, for he never denied any worthy cause.

Even though he had not been in the best of health for several years, he led a busy, active professional life up until the day he died. He spent Christmas day quietly in his home with family and friends, and on Christmas afternoon suffered a heart attack. He passed away during the night. With sincere sorrow and grateful remembrance, his friends and members of this profession record their deep appreciation of the life and labors of this devoted Christian physician, who spent his whole life in ministering to suffering humanity.

DR. J. H. BOYLES

Funeral service for Dr. Joseph Henry Boyles, of 1710 West Market Street, whose death occurred January 24, 1939, at Piedmont Memorial hospital, was held January 26, 1939, at 3:30 o'clock in West Market Street Methodist church by his pastor, Dr. J. B. Craven. Interment followed in Forest Lawn cemetery.

Joseph Henry Boyles was born in Union county, the son of Rev. W. M. and Susan Boyles, September 27, 1873. After attending public schools and old Trinity, he took a medical course at the University of North Carolina. For a time prior to this, he was with the Odell hardware company, and, during the Spanish-American war, was in service in Cuba and the Philippines. Later he worked and studied in St. Luke's hospital, New York, and attended the College of Physicians and Surgeons in Baltimore. Completing his period of internship, Dr. Boyles returned to Greensboro, and was for a time associated with Dr. E. L. Stamey in the practice of Medicine. Later he was associated with Dr. J. W. Long in the operation of Greene Street hospital. Since that time, he has been actively engaged in practice.

About 12 years ago Dr. Boyles, associated with Dr. A. F. Fortune and Dr. J. G. Thomas, founded the Clinic hospital, now Piedmont Memorial hospital. He continued actively associated with the institution as a member of the medical staff, and was a leader in the development of the institution into a vital factor of community life.

Dr. Boyles had long been a member of the Guilford County Medical Society, the North Carolina Medical Society, and the American Medical Association. He was also a member of Percy Gray camp, United Spanish War Veterans, John Wesley Long Post, and Veterans of Foreign Wars.

Surviving are his wife, formerly Miss Ruth Sterne, Greensboro; one son, J. Henry Boyles, Jr.; two brothers, Frank C. and Marvin M. Boyles; and one sister, Mrs. Blanche Carr Sterne, all of Greensboro.

Your Committee on Obituaries begs leave to submit the following:

> In the passing of Dr. J. Henry Boyles, Greensboro and the community lose one of those citizens whose obituary is most eloquently written in the record of their lives.
>
> Dr. Boyles, veteran physician and surgeon, devoted his life to giving of encouragement, his personality, his strength and his skill wherever they were needed. That in the following of this career of humanitarian service he found time to join in the establishment and management of a hospital, to serve his country and to take a prominent part in church and community activities offers but further testimony to his usefulness. It is thus left to us merely to join with those whom he served, the community in which he exerted his influence, in appending a final "well done" and in giving thanks for the ministrations which he rendered, and the spirit which he manifested among us. It is especially sad when those who administer to others' ills are themselves claimed; but, withal, there is corollary emphasis upon eternal values and indestructible rewards.
>
> Be it resolved that we fellow members of the Guilford County Medical Society, of which Dr. Boyles was an active member, desire to give this fitting expression of our appreciation of his high character and of his long and devoted life of service in his chosen profession, and
>
> Be it further resolved that these resolutions of respect be inscribed upon the permanent records of our Society and that a copy be sent to his family. (Signed) S. R. Cozart.

DR. JOHN BERRY

Dr. John Berry, a member of this society, and for a number of years a prominent practitioner among us, passed away in his home at Southern Pines, May 25, 1939. He had been in ill health for several years and had retired from active practice.

Dr. Berry was born in Hillsboro, N. C., March 31, 1885, a son of the late Dr. John Berry and Mary Strayhorn Berry. His father was valedictorian of his class at Wake Forest, was a graduate of Jefferson Medical College, and served as surgeon to the 42nd Mississippi regiment, with the rank of captain. He did general practice at Hillsboro, N. C., and was well known to many of the older practitioners of this state and community. His mother, a member of an old and esteemed North Carolina family, was graduated from Edgeworth Seminary of Greensboro in the class of 1872.

Dr. Berry received his early education at Hart School, Hillsboro, and Clemson College in South Carolina; spent four years at the University of North Carolina (Chapel Hill), two years of which were devoted to the study of medicine; and was graduated second in his class at Jefferson Medical College in Philadelphia, 1908. After serving as interne at the Philadelphia Polyclinic following his graduation, he was appointed to the staff of the Pennsylvania State Tuberculosis Sanatorium, located at Mount Alto, Pa., and later was appointed deputy director of this institution. At the outbreak of the World War he volunteered his services and was appointed a first lieutenant, later being promoted to captain and major. A break in his health forced him to give up this work and he was given an honorable discharge.

After a period of rest and recuperation he came to Greensboro, and soon was able to build up a very active and lucrative practice. He was an able practitioner, with a genius for going into the details of every case and ferreting out those obscure symptoms that so frequently confront us. No physician in our midst enjoyed the confidence and esteem of his patients to a greater degree than did Dr. Berry.

On April 21, 1924, Dr. Berry was married to Miss Mary Strudwick of Greensboro, daughter of the late Judge and Mrs. Robert C. Strudwick of this city. To this union were born three children, Harriet, John, and Mary. Harriet died in early childhood.

While Dr. Berry lived in Greensboro, he was an active member of this society until his health failed, some four or five years ago, and he was forced to retire from active practice. He moved to the Sandhills, hoping there to regain his strength and be able to return to Greensboro and resume the work in which he was so interested and to which he had devoted his time and talent.

Funeral services were held at his residence in Southern Pines Saturday, May 27th, 1939, and were attended by a large concourse of devoted friends.

In the passing of Dr. Berry this society has lost an able, conscientious and devoted member; this community, a painstaking and capable physician; and all of us who were privileged to know him, feel that we have lost a sincere and valued friend.

Therefore be it resolved that this sketch of the life of Dr. Berry be spread upon the minutes of this society, a copy sent to the family of the deceased, and a copy to the Chairman of Obituaries of the State Society, to be included in their annual report.

(Signed) C. W. Banner, Chm.
S. R. Cozart
J. W. Slate,
Obituary Committee.

BOOK REVIEWS

LEUKEMIA AND ALLIED DISORDERS. By Claude E. Forkner, M.D., Assistant Professor of Clinical Medicine, Cornell University Medical School and Assistant Attending Physician, New York Hospital. Cloth. Price, $5. Pp. 333, with 73 illustrations in black and white, and 7 in color. The Macmillan Company, 1938.

This is a comprehensive monograph on leukemia which collects together in one volume all that is known about this group of diseases. The pathologic physiology of the blood and blood forming organs and its bearing on the structure and function of the organism as a whole is given particular consideration. The author states that, "this is the first attempt, in a comprehensive way, to correlate the factors of altered structure and function with the clinical manifestations of the disease." About 1600 references are cited in the text and listed at the end of the book, occupying a section of 54 pages. These references include all the work of any value that has ever been published on the subject, beginning with the first reports of the disease by Craigie, Bennett and Virchow in 1845. The table of contents and index are especially complete. One long chapter discusses the changes found in the various organs and organ systems. The chapter on treatment is comprehensive, and includes and evaluates every form of treatment that has ever been tried. In addition to the leukemias a large number of disorders, frequently considered separately, but bearing various relations to leukemia, are presented. These include reticulosis, reticulo-endotheliosis, pseudo-leukemia, leukemia, chloroma, leuko-sarcoma, and leukemoid states. The book is truly comprehensive and should be in the possession of everyone interested in disorders of the blood.

RECENT ADVANCES IN HEMATOLOGY. By A. Piney, M.D., Ch.B. (Birm.). M.R.C.P. (Lond.). Assistant Physician, St. Mary's Hospital for Women and Children, London. Fourth Edition. Pp. 312, with 8 coloured plates and 34 text figures. Price, $5. Philadelphia: P. Blakiston's Son & Co., Inc., 1939.

This book has been almost entirely re-written since the last edition in 1931. It is more than a review of the recent knowledge of hematology, as many well known facts are included as a background. The book therefore deals with the present position of hematology as well as the recent advances in our knowledge. It begins with a study of the circulating cells, their ancestors, and the organs in which they are formed. The pathological changes which occur are then taken up in considerable detail, and most of the book is devoted to these changes. The author presents his own belief that megaloblasts occur in post-embryonic life not as a normal part of maturation of red cells, but only as an abnormal response of the hematopoietic system, in the nature of a reversion to the embryonic type; however, he gives full attention to the most widely held views. The reviewer sees no good reason for assuming that the stages of blood cells in embryonic life differ materially from the stages of development in the adult, even though there are marked changes in the place of origin of different cells. The section on Ineffective Leukocytosis, after a discussion of the general principles of leukocytosis, has a number of pages devoted to specific changes found in various diseases. The leukemias and anemias are adequately discussed as well as the related diseases of the blood-forming organs. Throughout the book the author warns against imagining "that there are, so to speak, a definite number of 'diseases', some of which still await discovery. In this sense there are no 'diseases'; there are only reactions, some of which, on account of their regularity, can be grasped as a sort of conceptual unity; but that does not entitle them to be regarded as self-existent entities—as diseases". This is a valuable book. The color plates are good, and the illustrations are clear and well chosen. There is a glossary at the end of the book and a list of references at the end of each chapter. This book has apparently been designed for the general practitioner, as the various disease states are frequently illustrated with case reports.

THE CLINICAL DIAGNOSIS OF SWELLINGS. By C. E. Corrigan, M.D., F.R.C.S. (Eng.), Lecturer in Surgery, University of Manitoba, Assistant Surgeon and Director of the Out-Patient Department, St. Boniface Hospital. Price. $4. Baltimore: The Williams & Wilkins Company, 1939.

In this day of highly specialized laboratory procedures it is stimulating to find a book which is concerned with diagnosis by clinical methods alone, without any dependence on laboratory work. Diagnosis is essentially an art, and the examiner himself rather than his laboratory aides must forever remain the final master of the court of medical decisions. The basis upon which this book is written is well expressed in the beginning of the first chapter as follows: "When attacking any problem it is first necessary to marshal all facts, weed out those that are non-essential or spurious and then proceed to deduce the solution from one's knowledge of the subject. Now the facts in this case are the physical signs and their elicitation demands training and experience. Fortunately however, there is no need to review the signs critically—all may be accepted as genuine. It is this note of authenticity that renders the problem delightful, particularly when contrasted with the interpretation of symptoms. All the bogeys of exaggeration, minimizing, dramatization and language difficulties which so frequently color the patient's complaints, are excluded from the picture. No matter who the patient, his swelling is more eloquent than his tongue. Can we but learn to converse in the language of physical signs which are so devoid of duplicity, the meaning or nature of the lump will usually become obvious." This book is soundly written, and interspersed throughout are historical references to some of the great clinicians of the past, many of whose names are attached to present clinical entities. The book is concerned only with swellings and is well illustrated with line drawings which bring out the salient points. It does not cover the entire field of surgery and is not confined to the commoner conditions, but rather to those in which the diagnosis is best reached by clinical methods. It is a thoroughly practical and usable book in clinical practice.

A TEXTBOOK OF BACTERIOLOGY. By Hans Zinsser, M.D., Professor of Bacteriology and Immunology, Harvard University Medical School; and Stanhope Bayne-Jones, M.D., Professor of Bacteriology, and Dean, Yale University School of Medicine. Eighth Edition. Revised and Reset. Price. $5. New York: D. Appleton-Century Company, Inc., 1939.

This book needs no introduction to the medical profession. It is intended for use by students of medicine and public health, and presents the fundamentals of bacteriology and immunology and the application of these to the understanding and control of infectious diseases. In this edition the section on pathogenic protozoa has been omitted, and obsolete material has been removed. This results in some reduction in size of the book. The advances in bacteriology made within the last few years are well covered. References are listed at the end of each chapter, and the usual section on methods is present.

TEXTBOOK OF NERVOUS DISEASES. By Robert Bing. Translated and enlarged by Webb Haymaker. Price $10. Pp. 838. St. Louis: The C. V. Mosby Company, 1939.

The neurologist and the internist alike will find this excellent translation of the fifth German edition of Dr. Bing's work an indispensable addition to his medical library. This book, unlike most textbooks of neurology, leaves the anatomy of the nervous system to other works, and concerns itself primarily with disease states of the brain, spinal cord and peripheral nerves. The book is clearly written, well translated, and well organized. The newer methods of treatment, including the use of thiamin chloride in the various conditions for which it is indicated are given full space.

In Robert Waterbury's preface to the American edition, reference is made to the lucid style employed by Dr. Bing. The book does make interesting reading, and one is constantly impressed with the consummate skill and accuracy of its famous author.

The chapter on convulsive disorders contains an accurate appraisal of the relatively new drug, dilantin, and explains its advantages over the time-honored bromides and phenobarbital.

There is a good chapter on headache, and a complete discussion of the psychoneuroses. Complete bibliographies are furnished throughout the book. Altogether it is a worth-while book, and merits a wide sale.

CLINICAL BIOCHEMISTRY. By Abraham Cantarow, M.D., Associate Professor of Medicine, Jefferson Medical College, Biochemist, Jefferson Hospital; and Max Trumper, Ph.D., Clinical Chemist and Toxicologist, formerly in charge of the Laboratories of Biochemistry of the Jefferson Medical College and Hospital. Second Edition, Revised. Price, $5. Philadelphia: W. B. Saunders Company, 1939.

This book has been thoroughly revised, and a number of new chapters and sections discussing new topics have been added since the first edition. The book is designed to correlate laboratory data with clinical findings in the field of biochemistry, thereby allowing the reader to select the appropriate tests valuable in diagnosis, and to interpret the data obtained from these tests in relation to the case at hand. In addition the book presents simply and accurately the fundamental principles of biochemistry as it is related to clinical medicine. The title has been changed from "Biochemistry in Internal Medicine" to "Clinical Biochemistry". A selected bibliography has been added at the end of each chapter, a marked improvement over the previous edition. At the end of the book there is an outline of clinical diagnostic features of various disorders, which is cross-indexed with the rest of the book. There is also a table of the normal chemical standards of the blood and cerebrospinal fluid, and of various chemical procedures. The book ought to be of distinct aid both in increasing the understanding of the biochemistry of the body, and in choosing and interpreting laboratory procedures.

The Frontiers of Science.—In the year 1843 the Commissioner of Patents said in his report: "The advancement of the arts from year to year taxes our credulity and seems to presage the arrival of that period when human improvement must end."—Winfred Overholser: The Broadening Horizons of Medicine, Science, 90:2338 (Oct. 20) 1939.

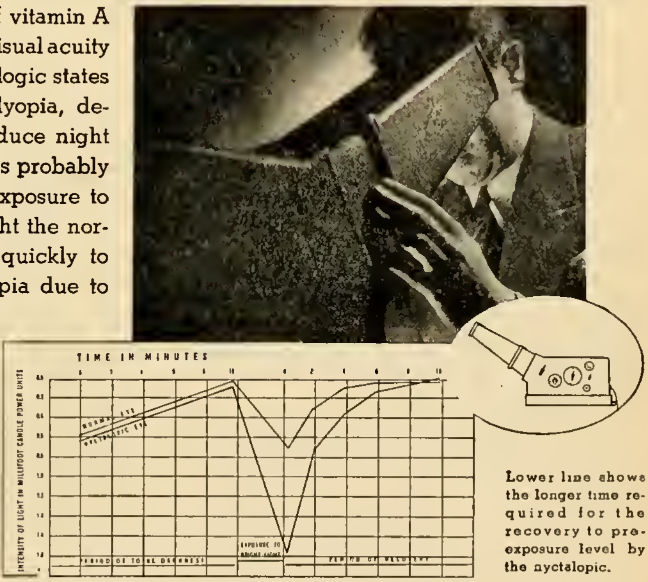
STUDIES IN THE AVITAMINOSES

This page is the second of a series on vitamin deficiencies presented by the research division of The Upjohn Company because of the profession's widespread interest in the subject. A two-page insert on the same subject appears in the February 17 issue of The Journal of the American Medical Association.

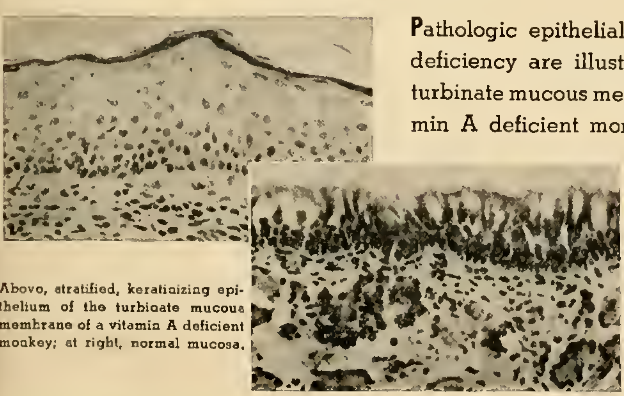
Manifestations of Vitamin A Deficiency

One of the early manifestations of vitamin A deficiency is nyctalopia, a loss of visual acuity in dim light. While several pathologic states (retinitis pigmentosa, toxic amblyopia, detachment of the retina) also produce night blindness, vitamin A deficiency is probably the most frequent cause. After exposure to the blinding glare of a bright light the normal eye adapts itself relatively quickly to lowered illumination. In nyctalopia due to vitamin A deficiency, the time required for recovery of visual acuity is longer.

In otherwise normal eyes, measurement of capacity for dark adaptation by means of the biophotometer has been suggested as a method of discovering vitamin A deficiency.



Lower line shows the longer time required for the recovery to pre-exposure level by the nyctalopic.



Above, stratified, keratinizing epithelium of the turbinate mucous membrane of a vitamin A deficient monkey; at right, normal mucosa.

Pathologic epithelial changes produced by vitamin A deficiency are illustrated by the photomicrographs of turbinate mucous membrane taken from normal and vitamin A deficient monkeys. The progressive pathologic process consists of atrophy of the epithelium, reparative proliferation of the basal cells and finally, as depicted in the upper photograph, replacement of the normal by a stratified, keratinizing epithelium.

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THE MAKING OF A CLINICIAN

DAVID RIESMAN, M.D.
PHILADELPHIA

Three things that had their roots in the nineteenth and their development in the present century have radically altered the course of medicine—the invention of instruments of precision, the development of biochemistry, and the rise of specialism.

Instruments of precision, among which I include the x-ray, have oriented medicine and science as a whole in the direction of quantity or measurement. Instruments of precision are nice and neat and precise. So seemingly are the data derived from them. They satisfy the human longing for certainty, but they can never give a complete insight into the human mind, or even into the human body as a whole.

Biochemistry is likewise a quantitative science. Nothing has contributed more to our understanding of human physiology in health and in disease than the work of the chemist and the biologist.

In addition to such invaluable fundamental knowledge, these two sciences have placed in our hands new remedies of enormous actual and potential value. I need only mention antitoxins, salvarsan (arsphenamine), insulin, liver extract and sulfanilamide.

The revelations of electric brain waves ,a science as yet in its infancy, may throw much light on heredity, on human personality and other subtle phenomena of life. But when all these discoveries present and to come are added together, something still remains that will elude quantitative measurement—the emotions, thought and the psyche. Since we learn about them only by psychiatric and psychoanalytic means and since their importance cannot be overestimated, their study must be incorporated in our teaching and our practice. I am glad to see increasing evidence of a distinctly psychosomatic outlook.

Of all the factors influencing the development of medicine specialisms has brought about the greatest change since I entered the profession. A famous surgeon like D. Hayes Agnew of Philadelphia, who, it will be remembered, was called to attend President Garfield after he was shot, took out cataracts from the eyes and stones from the bladder with equal skill. Only an occasional opthalmologist limited himself to his specialty. Even I in my humble way did many things that I later abandoned—obstetrics, minor surgery, nose and throat treatment and simple gynecologic procedures.

The public has become so specialist-conscious that many persons without consulting their family physician go directly to the cardiologist, the allergist, the metabolist or the gastroenterologist for advice. Some have even added a "gland specialist" to their ever lengthening list. Bliss Perry(1) exaggerates, however, when in speaking of specialists, he says: "Of course their advice was sound, and most of it, except the cardiograph's, is to be found in Cicero's '*De Senectute*' ".

I do not want to give the impression that the rise of specialism is an evil. Concentration upon a single field increases one's skill in that field, but it has inevitably the tendency to narrow one's outlook. A specialist is in danger of considering his branch of disproportionate importance; he comes to live in a water-tight compartment.

On the other hand the clinician with whose making I am concerned is not a narrow specialist. He is first of all an internist

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Address delivered at the dedication of the new Medical and Public Health Building of the University of North Carolina at the Sesqui-Centennial Celebration on December 4, 1939.

(1.) Perry, Bliss: And Gladly Teach, Boston, 1935, p. 264.

—that is, he deals with the diseases of all the internal organs including the nervous system. In addition he is a teacher at the bedside, for that is what the word clinician means. It is derived from the Greek word *kline*, "a bed". In other words the clinician is a practitioner and teacher of internal medicine.

Usually a clinician is also an authority in one of the special fields of medicine, but he will not confine his interests or teaching to that field, nor will he desire that the public or the medical profession shall consider his interests limited to it; by his writings he will show that his field covers a wider range.

Clinical medicine of this type which takes almost the whole body for its domain began about two hundred years ago in the little university town of Leyden in Holland. Here a round-headed, full-moonfaced Dutch physician, Hermann Boerhaave, took medical students into the wards of his small hospital and taught diagnosis and treatment at the bedside. So successful was he that students flocked to him from all parts of the world, including America. The great Albrecht von Haller called him "*totius Europae magister*" —the teacher of all Europe.

Boerhaave's example made its way very slowly among the medical faculties in Europe. The tradition of teaching from old texts was too strong. Edinburgh, founded by pupils of Boerhaave, was one of the first universities where bedside teaching was practiced. As the first medical school in the American Colonies—the University of Pennsylvania—was founded by graduates of the Athens of the North, it is not surprising that clinical teaching found an early home in Philadelphia. Thomas Bond began to give bedside instruction in the Pennsylvania Hospital in 1766. The next clinical professor in this country was James Jackson of the Harvard Medical School, who was elected in 1821 and gave his lectures at the newly opened Massachusetts General Hospital. Jackson is famous in his own right and also by reason of his brilliant son, James Jackson, Jr., the favorite pupil of the great French teacher, A. P. C. Louis.

Although the University of Edinburgh had lectures in clinical medicine in the 18th century it had no professorship in that subject until 1913.

In Germany the title of clinical professor as distinct from that of professor of the theory and practice of medicine does not exist; every professor of medicine is *ipso facto* a *Kliniker*, or clinician.

In this country the example of Thomas Bond and James Jackson had very few imitators in the first half of the 19th century. In the great majority of medical schools teaching was entirely by lectures[*]. Of thirty-seven medical colleges in 1851, clinical or bedside instruction, always meager, was available in only sixteen.

I was fortunate in arriving on the medical scene at a time when a wonderful group of men who represented clinical medicine at its best flourished in this country. They encompassed the whole realm of internal medicine and were helpful advisors in diseases of all the internal organs. They were general consultants; I might say national consultants. Like the Michelangelos and the DaVincis of the Renaissance, these physicians were versatile men. Those I have in mind—Reginald Fitz, Edward G. Janeway, J. M. DaCosta, William Pepper, William Osler, Frank Billings and John H. Musser —occupy permanent places in the medical pantheon. Fitz, Janeway and DaCosta were past their prime when I began the practice of medicine, but the echo of their great work was still audible in my youth.

Reginald Fitz made his name immortal by his fundamental studies on perforation of the appendix, a condition well-known today but poorly understood before Fitz's time. We also owe to Fitz pioneer investigations on acute pancreatitis, his paper on that subject being a medical classic.

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[*] I was interested to find that in Trinity College Medical School, Dublin, in the early years of the nineteenth century, there had been clinical professors, holding, however, subordinate rank.

When Professor James Macartney proposed in 1814 that before students presented themselves for their final examination, they should have a practical test in English, his proposal was bitterly opposed by the other professors who insisted that not only should all examinations practical as well as theoretical be conducted in Latin but that the clinical lectures and the reports of cases studied should also be in Latin.

One of the professors, named Hill, expressed himself as follows: "Examinations in English as introductory to a learned profession are so absolutely contrary to the conception which I entertain of a literary education, as to render it impossible that I would tolerate them in any case in which I possessed any influence. No instance of the kind has ever happened to me, and in the examinations of Medical Candidates under a Liceat ad examinandum how could I in any possibility be satisfied through such examination of the Candidates being Doctrina idoneum." (Kirkpatrick, T. Percy C.: History of the Medical School and Trinity College, Dublin, Dublin, 1912, p. 235.)

Edward G. Janeway had been a pathologist and a teacher of pathology in his early years. It was this training undoubtedly that made it possible for him to become one of the leading medical consultants of his time. Janeway's son seemed destined to rival his father, but pneumonia carried him off in the prime of life.

J. M. DaCosta's text-book on medical diagnosis was one of the first works in this country on that subject. It passed through many editions. DaCosta had a remarkably keen ear. Dr. Deaver once told me that at a consultation DaCosta, after examining the patient, turned to the other doctors present and said in all seriousness that he had heard "the echo of a rale". DaCosta was famed throughout the country as one of the greatest clinical lecturers in American medical history.

William Pepper, a brilliant teacher, always began his lectures almost with the very word that would naturally have followed where he had left off in the preceding lecture. If the first sentence in a new lecture and the last in the old had been placed together, not even a paragraph would have separated them. I am reminded of Luis de Leon, who, when he returned after five years in the prison of the Inquisition, began his lecture to his students of the University of Salamanca, "As we remarked when we last met".(2)

William Pepper, like Janeway and Fitz, began his career as a pathologist. It was he who discovered that in pernicious anemia the yellow bone marrow becomes red, a discovery that a year later was made independently by Julius Cohnheim in Germany, who usually gets the credit for the observation. It is also probable that Pepper saw the malarial parasite several years before Laveran.

William Osler is the ideal of all Americans who aim to be clinicians. He resembled Boerhaave in that he was the one who established for the first time complete bedside teaching in this country at Johns Hopkins Hospital. Like Boerhaave he attracted pupils from everywhere. Osler was proud of his pioneer work and wanted as his only epitaph, "I taught medical students in the wards."

Thoroughly at home in pathology—a good deal of his training in this field was obtained at the Philadelphia General Hospital—, familiar with medical literature to a degree rarely equaled, Osler became one of the greatest clinicians of all time. In achieving this distinction he was helped by another accomplishment—a profound knowledge of medical history and of general literature, which is evident in all his writings and gives them their peculiar and perennial charm.

Osler always emphasized the importance and value of careful physical examination. More mistakes, he believed, were due to omission than to commission, to overlooking than to faulty reasoning.

John H. Musser was one of my teachers, and also a friend of my medical youth. A good pathologist and a real expert in physical diagnosis, he had an unusual flair for guessing correctly. His private and consulting practice was enormous, so exacting that it killed him at the early age of fifty-six. His textbook on diagnosis and his voluminous writings show the breadth of his knowledge of medicine.

Frank Billings of Chicago, large of frame and big of brain, in some respects the Daniel Drake of his time, was a keen, independent clinician whose mastery of medicine in its principal phases made him an admired teacher and a much sought after consultant. To these qualities he added the gift of stimulating research in others. We owe to him and his pupils the modern ideas of focal infection.

I cannot refrain from telling a story of Billings: He was once called as an expert witness, had given his testimony and had been turned over to the opposing attorney. This man began, "You are Dr. Frank Billings?" "Yes." "You are the great Dr. Billings?" "I am Dr. Billings." "People come to you from the country over?" Dr. Billings smiled. "You are the Doctor Billings that is called in on all important serious cases?" Dr. Billings' face expanded more and more and he smiled benignantly. "You are called practically always when some important citizen in this community is ill?" Dr. Billings admitted this. "You were called when Mr. Lawrence was ill?" "Yes sir." "Mr. Lawrence died." "Yes sir." "You were called when Mr. William Fairbanks was ill?" "Yes sir." "He died?" "Yes sir." "You were called clear across the country when Mr.

(2.) Howe, M. A. de Wolfe: Holmes of the Breakfast Table, London and New York, 1939, p. 32.

Marshall Field was ill?" "Yes sir." "Mr. Field died?" "Yes sir." "You were called in when Mr. Harrison was very ill?" "Yes sir." "He died?" "Yes sir." "That will do, Dr. Billings."

Dr. Billings stepped off the witness stand completely flattened and hoped that he might some time meet that rascally lawyer in a dark alley at night.

Germany before the war also had a large number of truly great clinicians—Kraus, Ewald, Senator and His in Berlin, von Muller in Munich, and others in the smaller universities. I might add parenthetically that nearly all the great men in the larger German cities were taken from the smaller universities where their abilities had been tested over a period of years. That system of progressive movement from smaller to larger fields had done much to make pre-war Germany the principal center of medical science in the world. In this country we have perhaps been given too much to inbreeding. There is a curious resistance, especially among alumni groups, to the calling of men from the outside.

The clinicians whose biographies I have briefly given were all-round physicians and teachers because they were masters of physicial diagnosis and were skilled pathologists. The reason they have had only few successors is that the present generation more and more neglects those two foundation stones of clinical medicine. To illustrate I shall quote from the Harvey Oration delivered in 1930 by a distinguished English physician, G. Lovell Gulland(3): "The time will come when the differential count will be more important than the auscultation of the heart." This remarkable statement is a clear presentation of a trend of modern medicine that I believe to be unwholesome and unwise.

One might ask Dr. Gulland, "If you were ill, would you prefer to be treated by a man who knew all about the differential count and little about auscultation of the heart, or *vice versa?*" There can hardly be any doubt what the answer would be. But, I shall not pursue that *argumentum ad hominem.*

I am, however, deeply concerned over the growing tendency to magnify the laboratory at the expense of the bedside study of disease. Not that I am unaware of the possible charge that it is a failing of old men to talk of the great personages of their day, to say that nothing is as good as it was. It is only too easy, I know, to be *laudator temporis acti.* But are not the young equally under a delusion when they think that nobody is any good who was not born yesterday?

I do not want to convey the impression that I lack respect for the laboratory. No one can value more than I do the help it gives in diagnosis and treatment, and in advancing the science of medicine. As a place for research it offers the greatest hope for the future welfare of mankind; but as a practicing physician I cannot approve of the growing habit of thrusting the burden of diagnosis upon the laboratory, when we might arrive at a diagnosis ourselves by the simple expedients of a good history and a careful physical examination.

More than one intern has come under my observations who, when I asked him "What do you think ails this patient?" replied, "I have ordered the laboratory work, but the reports have not come through yet." That is the wrong approach. The hospital or medical school that turns out men who attack the problem of disease in that fashion fails in its duty. How often are we as physicians obliged to make a diagnosis on the spot. In consultation practice the consultant nearly always has to arrive at a decision before he leaves the patient's house.

Another reason for the rarity of the older type of clinician is the loss of interest in pathology, in morbid anatomy. Every one of the great men of whom I have spoken was a good pathologist and knew the appearance of diseased organs and the physical signs and symptoms they produced during life. DaCosta long ago said the best portal of entry into clinical medicine is pathology.

During my early years as pathologist the autopsy room would be filled with interns and young doctors whenever a postmortem was being held. Recently I attended an autopsy in one of our largest hospitals. There was only one intern present: yet the case was an interesting one, capable of teaching important lessons.

I have thought about the possible reasons for the lack of interest in autopsies and have come to these conclusions: The autopsies today are made by men who are purely pathologists and know little or nothing about clinical medicine. They cannot therefore

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(3.) Gulland, G. L.: The Circulating Fluid, Edinburgh M. J., 37:567, 1930.

correlate the findings of the postmortem with the symptoms and signs during life. It was the ability of the earlier pathologists to do this that caused autopsies to be so well attended. This probably unalterable situation can be overcome if the physician—senior or junior—who saw the patient during life is present at the autopsy.

During recent years I have adopted a method of teaching clinical medicine with the definite purpose of giving to my students a greater independence and self-reliance. This method is as follows:

During ward rounds I take a new case about which I know nothing—often one recently admitted. Beginning at the beginning, I ascertain the history, limiting my questions to essentials. Then I make the physical examination, questioning the students as I proceed as to what I am endeavoring to ascertain in the light of the history; all unnecessary examinations are omitted. In the process of examination I refrain from asking the results of x-ray or other laboratory studies, but try, with the help of the students and the interns, to arrive at a diagnosis. The whole procedure aims to represent the process the physician or consultant has to go through when he sees a private patient for the first time. If a diagnosis cannot be made on the basis of the history and physical examination, then I inquire as to such laboratory data as seem to be necessary, and if the tests have not been made I order them.

By this approach I try to counteract among my students the growing habit of putting the patient, as it were, into a laboratory hopper and having him come out fully diagnosed with a minimum amount of cerebral activity on the part of the student and intern.

It has always seemed to me that for the practical training of students in clinical medicine the out-patient department is better than the wards of a hospital. Dispensary practice is akin to private practice. The time for study is brief, the tools are limited, the diagnosis has to be made on the spot. Where the instructor in charge is conscientious, practice among out-patients unquestionably sharpens the student's clinical sense, makes him a better observer, a keener and quicker reasoner, altogether a more independent human being. I should like to see dispensary instruction placed in the fourth year of the medical curriculum.

The ideal clinician of the future as I see him in my mind's eye will be a greater man than the Oslers of the generation before me. He will naturally be at home in physiology and in biochemistry. He will utilize the data of the specialist understandingly, not blindly, and he will be a capable psychologist. Having these qualities, he will be able to inspire students as he stands at the bedside of the patient. He will probably do some research work, especially in the wards and out-patient department, and will stimulate laboratory research suggested by his bedside experience.

He will have to pay for this comprehensive knowledge by giving more time to his preparation, more time to keeping up with medical progress. This race of medical supermen—will they find any leisure for the humanities? For the humanities should not be left out of a doctor's life. I believe it is possible for a man to cultivate the humanities as his avocation. While the height of the body is limited, the extent of the mind is not. You can fill the memory, but it never runs over.

Medicine is advancing so rapidly, the literature is piling up with such disturbing speed, that only by intense application can a medical man keep in step with medical progress. However, it is possible if he can create for himself in the very beginning a pattern of work — "for the gods bring threads to a web begun."(4)

(4.) Hale, George Ellery, quoted in Isis, 236, May, 1939.

A Doctor of the Old School.—The physician who cared for me during my childhood was a genius of his day. Let us not raise the question of whether he served society by helping me to live through the gamut of infectious diseases, then highly lethal, but now mostly under scientific control. That physician was almost self-educated. He read, rode, and practiced under guidance of his predecessor of a still earlier generation. Whether his patients lived or died, he studied the results to guide him in subsequent cases. That doctor's fees were moderate though paid with difficulty and gratitude—sometimes paid mostly in gratitude. His house was the best in the whole community, his riding and driving horses the best, his advice and leadership gladly accepted by nearly all citizens. His occasional defeats by John Barleycorn were promptly forgiven by all except the preachers, who also forgave him when their next illness came upon them.—Caldwell, Otis W.: Some Problems of an Educated Minority, Science 89: 2322 (June 30) 1939.

VAGINAL URETEROLITHOTOMY

With a Review of Reported Cases

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Each case of ureteral calculus requires individual solution. Factors influencing the type of treatment are: the size and location of the stone, its progress down the ureter, the degree of obstruction produced, the severity of any co-existing infection, and the intensity of the patient's suffering. The proper treatment of a ureteral stone frequently requires more careful judgment than is usually exercised in handling other lesions of equally common occurrence, if the kidney is to be conserved and undue and prolonged suffering prevented.

It is generally conceded that about 50 per cent of ureteral stones will pass without instrumental or operative intervention. Leading urologists differ greatly in reporting the percentage they are able to remove by cystoscopic manipulation.

Of the stones that do not pass spontaneously, or that cannot be made to pass by the use of the cystoscope, the greater number become lodged in the lower third of the ureter. This is especially true in women. Young (1), in 1903, emphasized, that "that portion of the ureter lying within the broad ligament is frequently narrowed by disease of the female pelvic organs, and furnishes a common point for the impaction of calculi."

Beer(2) found it advisable to operate on 34 per cent of patients with stones in the lower ureter. Von Lichtenberg(3) operated on 30 per cent of these patients, and has said that he "would much rather do the operation early in a certain percentage of cases, feeling that the kidney is spared by a careful operation far more than if a long drawn-out, conservative plan of procedure is adopted; although such a procedure may be successful in getting the stone, the kidney goes onto partial destruction."

The keen satisfaction that is experienced by the cystoscopist in extracting a stone from the ureteral orifice is a strong stimulant to treat the next case in the same way. And yet, at times, patients who have had multiple manipulations and dilatations come to fear the procedure more than an operation. One should be careful that one does not, for the sake of statistics, prolong such treatment beyond the point of safety.

Stones that are not made to pass after two or three cystoscopic manipulations are usually found to be embedded in the ureteral wall, or densely adherent to it. The duration and severity of the impaction, and not the size of the stone, should determine the decision to operate. Bumpus(4) has pointed out that prolonged intra-ureteral manipulation may lead to an acute-supperative nephritis. He reports two such deaths; Munger(5) records one; and I have seen one.

The extreme difficulty that may be experienced in removing a stone from the lower ureter by the usual methods of approach is undoubtedly one reason why prolonged and repeated cystoscopic trials meet with almost universal approval. The extraperitoneal incisions advocated by Gibson in 1910, and by Judd(6), in 1914, permit a most satisfactory exposure of the ureter; but in order to follow it to the bladder and remove a stone located in the extreme lower portion, it sometimes becomes necessary to divide the round ligament, the broad ligament, and the uterine artery. It is stones within this "area of difficulty" and presenting such surgical hazards when handled by the usual methods of approach that lend themselves so readily to an approach from below through the vagina. And yet, most surgeons have been reluctant to take advantage of nature's provision and to remove through the vagina a stone that lies immediately beneath the finger on vaginal palpation.

It is true that vaginal ureterolithotomy has not been mentioned often enough in the medical literature to keep us aware of its possibilities. A thorough review of the litera-

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1. Young, H. H.: The Surgery of the Lower Ureter, Ann. Surg. 27:668, 1903.
2. Beer, E. S.: Diagnosis and Treatment of Ureteral Calculus, New York State J. Med. 16:501, 1916.
3. von Lichtenberg, A.: Harnleiterstein-Erkrankung, Jahresk, f. arztl., Fortbild. 20:30, 1929.
4. Bumpus, H. C., and Thompson, G. J.: Stones in the Ureter, Surg. Gynec. & Obst. 50:106 (Feb.) 1930.
5. Munger, A. D.: Management of Calculi in the Lower Third of the Ureter, Am. J. Surg., 39:584-588, 1938.
6. Judd, E. S.: A Method of Exposing the Lower End of the Ureter, Ann. Surg. 59:393, 1914.

ture reveals only 74 reported cases. We have done six such operation, four of which have been previously reported (7), thus making a total of 80. It is upon a study of these 80 cases that this paper is based. When the close relation of the lower ureter to the anterolateral vaginal wall is considered, it seems strange that this method of approach is so seldom used.

Because of the difficulty in removing a stone from the extreme lower ureter, numerous operative procedures have been devised and carried out. Ceci, in 1867, removed a ureteral stone through an incision in the rectum. The patient died 26 hours later. The report of this case led to repeated condemnations of this method, and no one since has used it. In 1892, Cabot(8) used the Kraske incision, removing the coccy and lower part of the sacrum with division of the sacroiliac ligament. He performed this operation successfully, as did Ferria, but he called attention to the difficulty in securing adequate exposure, and to the danger of hemorrhage from the hemorrhoidal vessels. The severity of the procedure caused its abandonment. Writing in 1898, Fenwick(9) reported the use of a prerectal or transverse perineal incision, separating the rectum from the bladder. Regnier also tried this method but failed. In the same year the statement was made "that stones impacted in the pelvic portion of the ureter were inaccessible to surgical treatment." Nevertheless, Rigby(10), in 1907, advocated an equally difficult and unsatisfactory procedure. He advised a parasacral or pararectal incision, differing from Cobot's operation only in that the coccyx and sacrum were not disturbed. He reported four cases, but his method failed to gain popularity. Kelly, in 1914, (11) devised the transvesical approach to ureteral stones lodged adjacent to the bladder, using a vesico-vaginal incision.

Emmett(12), of New York, in 1884, was the first to give an account of the removal of a lower ureteral stone through the vagina. Higgins(13) of the Cleveland Clinic, in 1937, reported eleven cases, the largest number recorded by any one author.

In the female the ureter runs forward and inward beneath the broad ligament, passing beneath the uterine vessels and lying about 2 cm. from the side of the uterus, at the level of the internal os. Emerging from the anterior surface of the broad ligament, before entering the bladder, it passes obliquely across the anterolateral vaginal wall, with which it is in direct contact. During this part of its course it is not covered with peritoneum but is loosely supported by connective tissue.

It has been stated that 90 per cent of normal ureters can be palpated through the vagina. After assiduously attempting to acquire this art for a number of years, I am forced to the conclusion that vaginal palpation of a ureter is posible only when some abnormality exists. The presence of a catheter in the lower ureter makes it easy to trace its course. When the ureter is the seat of inflammation or tuberculous infiltration, it is readily palpable. Stones situated within the ureter at any point between the base of the broad ligament and the bladder are readily felt through the vagina. Here it is interesting to note that Pauley(14) reports five cases and Igron(15) four cases in which they were able to remove stones from the lower ureter simply by bimanual manipulation, having one hand on the lower abdomen and the other in the vagina milking the stone down. They advise trying this maneuver before attempting any other procedure.

The various operators writing on vaginal urterolithotomy describe two methods of approaching the ureter through the vagina.

One method, as described by Doyen,(16) consists of incising the anterior culdesac, as

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7. Cobb, D. B.: Vaginal Ureterolithotomy, South. Surg. 1:230-241, 1932.
8. Cabot, A. T.: Observations upon the Anatomy and Surgery of the Ureter, Am. J. M. Sc. 103: 43, 1892.
9. Fenwick, E. H.: Operative Treatment of Calculi which have Been Lodged for Long Periods in Lower Ureter, Edinburg M. J. n.s. 3:281, 1898.
10. Rigby, H. M.: Operative Treatment of Calculi Impacted in Pelvic Portion of Ureter, Ann. Surg. 46:793, 1907.
11. Kelly, H. A.: Diseases of the Kidneys, Ureters and Bladder, New York, D. Appleton and Co., 1914, vol. 2, 159-163.
12. Emmet, T. A.: Principles and Practice of Gynecology, Philadelphia, Henry C. Lea's Son & Co., 1884, ed. 3, p. 796.
13. Higgins, C. C.: Vaginal Ureterolithotomy; 11 cases, Urol. & Cutan. Rev. 41:609-612, 1937.
14. Pauley, V. L.: The Removal of Ureteral Calculi by the Aid of Bimanual Vaginal Manipulation, Urol. & Cutan. Rev., 38:201-204, 1934.
15. Igron, S. M.: Transvaginal Route in Ureterolithotomy, Khirurgiya, no. 1, pp. 133-136, 1937.
16. Doyen: Calculs des Ureteres, Courrier med. 185, 1897.

in vaginal hysterectomy, separating the bladder from the uterus as high as the vesicouterine fold of peritoneum and exposing the ureter by gauze sponge and finger dissection. Furniss(17) recommends this type of approach to the ureter, and, if the vagina is small, advocates making an incision in either one or both vaginal sulci, high in the vagina and extending through the transversus perinei and levator ani muscles.

The method used by the greatest number of authors and the one employed by us, is to make a simple incision through the anterolateral vaginal wall in the line of the ureter —the stone acting as a guide—expose the ureter, and remove the impacted calculus.

Technique: The patient is placed in the lithotomy position and the vagina is exposed with a weighted speculum over the perineum and retractors against the lateral walls. The cervix is grasped with a tenaculum and pulled downward and to the opposite side, thus drawing the base of the bladder and the lower ureter near the introitus. After the stone is felt an incision is made through the anterolateral vaginal wall in the line of the ureter. The index finger is passed through this incision so as to locate the stone and ureter; then a blunt hook or Allis forceps is passed around the ureter above the stone. This prevents the stone from slipping up and out of reach. By gentle traction on this hook or forceps and by simultaneously releasing the pull on the cervix, the ureter containing the stone is brought through the vaginal incision. The stone is then removed through a longitudinal opening in the ureter. The ureteral incision is closed with two or three interrupted absorbable sutures passed through its outer layers, a rubber tissue drain is placed down to the ureter and brought out at the lower end of the vaginal incision, which is closed with a continuous suture.

Singleton(18) and Morris(19) have advised the passage of a catheter up the ureter before operation so as to aid in its identification. Shaw expresses the opinion that the passage of such a catheter will also serve to fix the stone in its location and make it less liable to slip up the ureter and out of reach. We have done this, but do not believe it necessary. A stone that is easily palpable will serve as an efficient guide in locating the ureter and the use of a blunt hook or forceps above the stone will prevent its escape upwards.

There is some difference of opinion as to the necessity of suturing the ureter. Of those who expressed themselves, most authors were in favor of placing a few interrupted sutures when possible. Some thought it advisable to place a catheter through the bladder up to the kidney pelvis following operation. Opinion was equally divided as to the necessity of suturing the vaginal incision. In the presence of infection, it should be left open; and when closed, drainage should be provided.

It is practically agreed that the operation should be done only in those cases where the stone is easily palpable and where there is sufficient vaginal relaxation to allow ample exposure and easy manipulation. That is not thoroughly in accord with the views of Lower(20), who has stated that his "experience includes nulliparous as well as parous women and the removal of stones which were so high that their palpation was barely possible." Igron also reports the vaginal removal of a ureteral calculus in a virgin, but states that it was necessary to incise the hymen in three places.

Possible Operative Difficulties: The difficulties that may arise are similar to those that may occur in the removal of a stone from any portion of the ureter.

1. The stone may slip up or down the ureter and away from the field of operation. Five cases are on record in which this has happened, the stone slipping up the ureter and requiring removal through an abdominal incision. Lower(20) has reminded us "that anyone who has had much experience in the removal of smooth ureteral stones from a dilated ureter will have had cases in which the stone has moved away from its first location. Such changes in the position of ureteral stones are not confined to any type of operation." It must be admitted, however, that the vaginal incision here described cannot be enlarged upward to any great extent and it is impossible to examine the ureter over much of its length or follow

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17. Furniss, H. D.: Vaginal Ureterolithotomy, Am. J. Surg. 17:249-253, (Aug.) 1932.
18. Singleton, A. O.: Kidney and Ureteral Calculi, Texas State J. Med. 17:486, 1922.
19. Morris, Henry: Surgical Diseases of Kidney and Ureter, Chicago, W. T. Keener, 1903, vol. 2, 529-530.
20. Lower, W. E.: Removal of Stone from Lower Ureter by Vaginal Route, J. Urol. 14:113, 1925.

a stone upward as can be done through an abdominal incision. With the technique now employed the danger of a stone moving upward is greatly lessened.

2. Severe hemorrhage may occur. The only such instance of this is recorded by Bloch(21). The bleeding was so free that tamponment was necesary. He later removed the vaginal tampon, freed the ureter and extracted the stone. Robinson, in using the approach described by Doyen(16) of incising the anterior culdesac and separating the bladder from the uterus, found it necesary to ligate the uterine artery.

3. The error of inadvertently opening the peritoneal cavity is not mentioned in any of the reports that have appeared in the literature. It did occur in one of our operations. After having performed three of these operations with such gratifying results, the fourth was done with much enthusiasm. This was a borderline case in which the stone was rather high and barely palpable. The stone was removed through the vaginal incision, but, in freeing the ureter, the peritoneal cavity was opened. A fatal peritonitis developed, either from contamination from the vagina, or, more likely, from the infected urine.

4. The accidental opening of the bladder occurred in two of our cases. This was immediately recognized, and the opening was closed. In one case there was no post-operative urinary drainage from the vagina; in the other case there was some drainage of urine for five days. This complication has also been described by Shaw,(22) who states that "if the operator keeps the relationship of the base of the bladder, cervix and ureter in mind, this accident should never occur. The bladder can be readily avoided by inclining the dissecting finger laterally and posteriorly and approaching the ureter on its lateral and posterior aspect. In other words, when the stone is felt, it should be medial and anterior to the dissecting finger."

Post operative urine drainage and fistula: Israel,(23) Doyen,(16) and others have advocated the use of an indwelling ureteral catheter following operation. From a study of the collected cases, however, it does not appear that this materially affects the post-operative drainage of urine. We have used this ureteral catheter post-operatively in four cases, but do not believe it necessary. In two of these four cases, there was no drainage of urine from the vagina; in one there was leakage of urine for six days; and in the fourth there was drainage for seven days before death resulted from peritonitis. In the two remaining cases the ureteral catheter was not used post-operatively. In one of these there was no leakage of urine, while in the other urine drained vaginally for five days. Many authors do not state whether post-operative urine drainage through the vagina occurred or not. But from a study of these cases it would appear that when it did occur, it was not prolonged. Lower(20) states that there "is not likely to be" any leakage of urine post-operatively, and that some of his patients were able to leave the hospital three or four days after operation; however, in one of these cases there was drainage of urine for 21 days—the longest time reported. Barney and Chute(24) have reported that in those patients whose ureteral stones were removed through one of the abdominal routes, "the urinary fistula persisted an average of 16 days." It is clear that the period of urinary drainage following vaginal ureterolithotomy compares most favorably with that which follows the removal of these stones through any other incision.

The likelihood of a permanent urinary fistula following the operation has apparently been exaggerated. Young(1) refers to "the frequent persistence of fistulae after the vaginal incision"; yet this did not occur in any of the 80 cases studied. In Cabot's case (25) it appears that a functionless pyonephrosis existed on the same side of the ureteral stone; for the moment the stone was removed there was a gush of pus from above. He introduced a rubber tube into the ureter through the vagine and left it in place for some time; after removal there was no tendency for the opening to close, and there was a constant, moderate discharge of pus

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21. Bloch, A.: Ueber Ureteroperation, Folia Urolog. 3:589, 1908.
22. Shaw, E. C.: Vaginal Ureterolithotomy, J. Urol. 35:289-299, 1936.
23. Israel, J.: Ueber Operationen wegen Uretersteinen, Folia Urolog., 7:1, 1912.
24. Barney, J. D., and Chute, R.: Management of Calculi in Lower Ureter, J. Urol. 25:173, (March) 1931.
25. Cabot, A. T.: Successful Case of Ureterolithotomy for an Impacted Calculus, Boston M. & S. J. 122:247, 1890.

TABULATION OF REPORTED CASES OF VAGINAL URETEROLITHOTOMY

OPERATOR	CASES	YEAR	OPERATIVE METHOD		SUTURE OF URETER	SUTURE OF VAGINA	POSTOPERATIVE RETENTION CATHETER	DRAINAGE OF VAGINAL INCISION	POSTOPERATIVE URINE DRAINAGE	HOSPITAL DAYS
			SIMPLE INCISION IN LINE OF URETER	DISSECTION OF BLADDER FROM URETUS						
Emmet	1	1884	Yes		Yes					
Berg	1	1888		Not Stated						
Doyen	3	1892	“	Yes	“		Yes			
		1895								
		1897								
Cabot	1	1892	“				“			
Cotterel	1	1894	“							
Israel	2	1896	“		“	No	“			
		1900								
Fenwick	2	1898	“		No	“				Rapid Convalescence
		1903								
Barling	1	1898	“							
Zuckerkandl	1	1900	“		Yes					
Munde	1	1901		Not Stated	No	“				
Singleton	1	1901	“		Yes			Yes		
Kelly	4	1902	“		“	Yes			16 Days	
		1914								
Jaboulay	1	1902		Yes	No					
Freger	1	1903	“							
Jacobs	1	1903	“		Yes					
Gradenwitz	2	1904	“							
Robinson	1	1904	“		“	“		“		
Garceau	2	1907	“	“	No	“	No	No		
Barnard	2	1907	“		Yes				10 Days	
Verboogen	1	1909	“							
Bloch	1	1909	“							18 Days
Brentano	1	1911	“							
Reed	1	1911		“	No			Yes	Few Days	
Heinsus	1	1913		“						
Ochsner	1	1919		Not Stated						
Lower	6	1925	“		Yes	“		“	“Not Likely”	3-4 Days
Belben	1	1926	“		“				Longest 21 Days	
Deaver	1	1930	“							
Pugh	1	1930	“		“				Few Days	
Furniss	1	1931		“						
Cobb	4	1932	“		“	“	Yes	“	2 Cases, 6 Days	12 Days
Furniss	1	1932			“		No	“	Not Stated	
Mann & Israel	2	1932	“		No	No	Not Stated	No	Few Days	4-5 Days
Brown	2	1936								
Heibert	1	1936		“	Yes	Yes	Yes	Yes	2 Weeks	2 Weeks
Rathbun	3	1936					No			
Shaw	4	1936	“		3 Yes, 1 No	Yes 2, No 2	Yes	“	1-5 Days, 1-0, 1-10, 1-5	1-10, 1-5, 1-2 Mos.,
Hicks & Moris	1	1937	“		No	Yes	Not Stated	“	Less Than 10 Days	10 Days, 1-12 Days
Higgins	11	1937	“		Yes	“	Not Stated	“	Longest 10 Days	Not Stated
Igron	4	1937	“		No	“	Not Stated	“	Not Stated	17 Days
Author	2	1939	“		Yes	“	No	“	5 Days, None	7 Days, 11 Days
TOTAL	80									

through it; but no urine ever came through the fistula.

Mortality: In the 80 cases of vaginal ureterolithotomy thus studied, there were four deaths, only two of which seemed to be directly attributable to the operation. One case was reported by Munde, who made no statement as to the actual cause of death. The other case was the fourth of our series in which death from peritonitis resulted from inadvertently opening the peritoneum. One of Kelly's patients died some years after the operation, but autopsy revealed that death was due to intra-abdominal adhesions incident to opening the abdomen at the time of the vaginal ureterolithotomy. This death should be attributed to the abdominal operation rather than to the vaginal. A patient reported by Jaboulay also died, but in this case he performed pyelonephrotomy in addition to vaginal ureterolithotomy. Undoubtedly this more formidable procedure contributed to this death.

Comment

Those who have had experience with vaginal ureterolithotomy commend it as the most satisfactory operation. It is admirably suited in obese, parous individuals. The consensus of opinion is that this operation should be reserved for those cases in which on vaginal examination the stone is readily palpable and there is sufficient relaxation to permit adequate exposure. The procedure of incising the hymen in several places or making an incision through the muscles of the pelvic floor extending to the tuberosity of the ischium is not particularly attractive. The operation should not be undertaken until after cystoscopic manipulation has been tried. The ease with which the operation can be accomplished to both operator and patient should justify its use earlier in the treatment of lower ureteral stones in women rather than prolonged cystoscopic treatments when little progress is being made. This is particularly true in those cases in which a severe infection is present and cystoscopic maipulations are poorly tolerated. In such patients the operation may be truly life-saving.

Conclusions

On a basis of personal experience with six such operations and from a study of 74 cases reported in the literature, the following conclusions, which are in accord with the views expressed by Lower,(20) may be drawn:

1. Vaginal ureterolithotomy is a comparatively simple method of removing a stone from the lower ureter, a location which makes other methods difficult.
2. It should be reserved for those cases in which stones are readily palpable on vaginal examination and in which there is sufficient vaginal relaxation to assure adequate exposure.
3. It affords dependent drainage should urinary leakage occur.
4. The possibility of a permanent ureterovaginal fistula seems to have been exaggerated. It did not occur in these 80 cases.
5. An external incision with the attendant possibility of hernia is avoided.
6. The period of convalescence is shortened.

Discussion

DR. HAMILTON W. McKAY (Charlotte): I can't add anything to what the author of this paper has said. I have had a very limited experience with vaginal ureterolithotomy—three cases only—in all of which I used the technique which Dr. Cobb has outlined and advocated, making the incision directly over the line of the ureter when the stone is distinctly palpable in the vagina. All three of these cases made an uneventual recovery.

I do want to bring to your attention and to condemn prolonged cystoscopic operative procedures in the removal of stone from the intra-ureteral portion of the ureter. You ask me why I condemn that procedure. If you remember the anatomical relationship of the cervix, the bladder, and the ureter, you know that the lower ureter is richly supplied with lymphatics. It is a misnomer to use the term "cystoscopic manipulation" in connection with the modern operative instruments used with the cystoscope upon a stone that fits snugly in the lower ureter. The mucous membrane is usually broken. Infection enters through the lymphatics causing a supperative nephritis which often ends in death.

I think the author has shown what fine surgery is being done in Madison County and in all parts of North Carolina. This is the second time I have heard Dr. Cobb speak on this subject, and I am tremendously interested in the fact that he is popularizing an operation that is essentially practical.

DR. D. J. ROSE (Goldsboro): I would like to thank Dr. Cobb for a very interesting paper. Everybody who practices medicine will sooner or later have patients with stones in the pelvic portion of the ureter.

Anything that I might say relative to the vaginal route for removing stones in the pelvic portion of the ureter is information which I obtained firsthand from Dr. Cobb, and I am very grateful for this valuable information.

I have had six or eight cases of vaginal ureterorolithotomy since Dr. Cobb allowed us the privilege of seeing how this operation was done. In this small series I have not had a complication: no urinary drainage, no hemorrhage, no infection, and no deaths. I know of no operation which makes a surgeon feel better this this operation.

There are two or three things which Dr. Cobb has rapidly mentioned which I would like to call to your attention as it was taught to me by him. One thing is that you must have free access to the upper vault of the vagina. Another is that good visibility is necessary. For that reason I do the operation as it was taught me by Dr. Cobb, but I do not use any dyes. I have been injecting into the introitus of the vagina a small amount of adenine chloride. This gives, I think, a little better visibility. Then, as Dr. Cobb said, a blunt hook or Allis forceps is passed around the ureter above the stone.

I certainly would not take issue with the author of this paper, but there is one thing that I believe is an advantage, certainly to me, and that is the handling of the ureter with a finger. You can evaluate the pressure or the pull that you have on the ureter better with your finger; and by having your finger above the stone you can prevent the stone from slipping back up the ureter.

A CASE OF AINHUM TREATED BY LUMBAR SYMPATHETIC GANGLIONECTOMY

COMPLETE BIBLIOGRAPHY

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Case Report

A colored male laborer, age about 45, was referred to me through the courtesy of Dr. A. G. Brenizer. His history was irrelevant except for the condition of his feet. There had been no other similar condition in his family to his knowledge. He did not know exactly when the trouble began, but it was evidently about a year before admission. Although an illiterate negro, he described the onset clearly by stating that it *looked and felt as if a string had been tied tightly around the base of each little toe.* About three months before admission both little toes had become gangrenous and had "fallen off". The process had involved a second toe on each foot with a similar onset. These, too, had fallen off, leaving in each instance a foul, ulcerating base. At first there had been some pain, which subsided as the process extended and the affected toes lost most of their sensation. When the patient was seen, there was some annoying, but not severe, pain..

Examination revealed a well developed, sturdy negro male. Findings were entirely negative except for the feet. On the right foot the middle and little toes and on the left the fourth and little toes were missing, leaving ulcerated bases from which was projecting in each instance some necrotic bone. The odor was quite offensive. With the exception of callouses, expected in a colored laborer and not as marked as sometimes seen, the feet were otherwise negative. Pulsation in the dorsalis pedis arteries, as well as in other palpable arteries, was normal. Blood pressure was within normal limits. Serological reactions for syphilis were negative. Urinalysis and blood sugar were normal. There was no evidence or history of tuberculosis. Thermocouple studies of the skin temperatures before, during and after artificially induced fever showed no impairment of the circulation in either the feet or the unaffected toes, eliminating, of course, calloused areas. In other words, he was apparently a healthy normal man, except for the above findings.

We were at a loss in diagnosis. Debridement of the areas followed by conservative treatment (hot applications of boric acid solution, etc.) did not lead to any appreciable improvement. After ten days the economic phase of the case led us to perform sympathectomy and ganglionectomy of the lumbar sympathetic trunks. Under spinal anesthesia, using the transperitoneal approach, resection of the second, third and fourth lumbar sympathetic ganglia and the intervening trunks with section of the communicating rami, was performed. Postoperative convalescence was entirely unincidental. The temperature of both lower extremities was raised several degrees, the ulcerated areas healed with remarkable rapidity, and the patient was dismissed from the hospital after two weeks to go to his home in a neighboring town. We still had not made a diagnosis!

On an occasion some nine or ten months later, when perusing a text on the Practice of Medicine, my eye fell on a short paragraph entitled "Ainhum". The diagnosis then dawned upon me, as the man's story, and to a large extent his clinical course, were classical. Efforts were made to trace him for a check-up and photographs of his feet, but to no avail. I learned subsequently that he had served a term on the chain gang at hard labor for running afoul of the law. All efforts to make contact with him have failed.

1. da Silva Lima, J. F.: Estudo sobre o ainhum, Gaz. Med. de Bahia, No. 1, 1867. (Quoted by various authors).

Ainhum

Ainhum was first described by da Silva Lima(1) of Brazil in 1867, although Messum in 1821 reported a case in the *Lancet*(2), and Clark in 1860 reported a case of "Dry Gangrene of the Little Toe"(3). In Brazil it is called "ainham" or "quiglia" and the Hindoo name is "sukha pakla", meaning dry suppuration(4). Bloom and Newman, quoting Rowens, state that the name *ainhum* is derived from the Yorulia dialect and means "a saw or file."(5) Matas(6) claims its origin is in Brazil and means a "fissure". Howard Fox has heard the name *ainhum* used by the Nagos, the African Negroes, among whom this condition is most frequently found, and he has chosen the name from all other names he heard because it designates best the morbid process and the natural termination of the malady—namely, the slow separation of the affected toe.(5)

The disease, also called "dactylolysis spontanea", is a tropical or semi-tropical disease, chronic in nature, affecting chiefly males, and occuring usually in dark skinned races. (Grschebin, however, reported a case in an 18 year old Russian.(7)) It is characterized by spontaneous amputation of the fifth toe, with involvement, in some cases, of the fourth toe, and very rarely of others. A constricting band, or line of demarcation, gradually forms at the proximal interphalangeal joint, usually of the fifth toe, deepening its furrow until complete amputation occurs. This is often the only evidence of the disease and is pathognomonic.(8)

The etiology is obscure. Numerous etiologies have been proposed: leprosy, injuries, chiggers, trophoneurosis, scleroderma, heredity, syphilis, yaws, wearing of toe rings, infection, and so on. None are satisfactory, except, perhaps, for individual cases. Wellman(9), Makel(8), Weinstein(10), Bloom and Newman(5) and others have offered excellent critiques of the various etiological suggestions. Horwitz and Tunick(11), Weinstein(10) and other observers have noted the frequency in familial occurrences.

The pathology may be considered from two view points: the primary lesion and secondary results. Babler(12), quoting Unna, considers it a primary degeneration of the epidermis—a sort of ring-formed sclerodermis, with callous formation of the epidermis, leading to secondary total stagnation necrosis. From a roentgenologic standpoint, Friedman(13) considers it probably a trophic lesion with atrophy and destruction in the distal phalanges. The end result is what one would expect in a constricting process: ischemia and anoxemia followed by total tissue death.

The diagnosis should not be difficult, as the constricting ring is pathognomonic of the disease.

Regarding treatment, most observers agree that division of the constricting ring does not always stop the process; they also agree that ultimate amputation of the toe or toes is advisable. Some patients complain of severe pain, and sodium iodide intravenously has been recommended for the relief of this pain(14); it has no curative effect. We can find no report in the literature where surgery of the sympathetic nervous system has been utilized in attacking the disease.

Incidence in North Carolina

It is interesting to note that this patient, who had always lived in North Carolina, is the third to be reported from the state. Hornaday, in 1881, reported a case of ain-

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3. Clark, in Tr. Epidemiol. Soc., London 1:105, 1860 (Quoted by various authors).
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5. Bloom, D., and Newman, B.: Ainhum: Report of a Case with Roentgenologic Findings and Review of the Literature. Arch. Dermat. & Syph. 27:783-793, 1933.
6. Matas, R.: The Surgical Peculiarities of the Negro, Tr. Am. Surg. Assn. 14:483, 1896.
7. Grschebin, S.: Observations on Ainhum: Does It Exist as an Independent Disease? Urol. & Cutan. Rev. 40:98-102, 1936.
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13. Friedman, L. J.: Roentgen Findings in Ainhum, Am. J. Roentgenol. 31:349 (Mar.) 1934.
14. Irgang, S. and Alexander, E. R.: Iodine Therapy for Relief of Pain in Ainhum, Arch. Dermat. & Syph. 30:508-509, 1934.

hum in a 10 year old negro girl.(15) He also cited a previous report by Pitman of a case in an adult negro male. Royster recently told me he had seen and treated, but had not reported, a case of ainhum in a colored man some thirty years ago in St. Agnes Hospital, Raleigh, N. C.(16) Bloom and Newman's case, seen in the dermatologic clinic of Bellevue Hospital, was a 39 year old negro man who had been born in North Carolina and had lived here for twenty-seven years before going to New York.(5) Cases have been reported from Philadelphia and Canada in negroes of North Carolina antecedents.(4) While this disease is a tropical or semi-tropical malady, occurring chiefly in Africa, Brazil and India, it may occur elsewhere in temperate climates or even in cold climates. It seems that more afflicted negroes have been reported from North Carolina directly, or from North Carolina antecedents, than from the other Southern states, except, perhaps, the Gulf states.

Discussion and Rationale of Sympathectomy

While it is true that the diagnosis in this case was made subsequently to observation and treatment, there is no doubt as to its accuracy. The pathognomomic sign was stressed by the man, and there were no other complaints except the non-healing ulcers, which were undoubtedly a progress of his trouble. There is evidence that in some cases the disease is not arrested by amputation of the toe, but that it continues to progress. Such was the condition here. Efforts to secure healing of the areas within a reasonable time were unsuccessful; hence, in the absence of a definite diagnosis, lumbar sympathectomy was done. The rapid recovery following operation and the fact that the man served a chain gang term at hard labor is some evidence that a cure was obtained.

I cannot say that lumbar sympathectomy and ganglionectomy are indicated in the treatment of ainhum. What would sympathy have accomplished in the earlier stages of the disease, during the constricting phase before the toes came off? Would it have prevented extension of the process? I do not know the answers, but do believe the second question can be answered in the affirmative. I have performed lumbar sympathectomy and ganglionectomy for thrombo-angiitis obliterans, Raynaud's disease, spastic paralysis, and intractable ulcers, with results both good and indifferent. In this instance, however, the results were nothing short of phenomenal.

Perhaps it may be contended that an operation of so formidable a nature is hardly justified for such a local condition. I am not sure that such a contention is entirely sound. I used the transperitoneal approach to the lumbar sympathetic chain, but since have used the extraperitoneal route, which is a safer operation. Provided the surgeon will use care against injury to the great vessels (the aorta on the left and the vena cava on the right), localize and get the ureters out of the way, and observe a meticulous hemostasis, especially deep in against the vena cava, I see little danger in the operation.

The rationale of the operation is reasonable. The physiologic response is that of increased blood supply to the legs by eliminating (partially at least) the vasoconstriction action of the sympathetic fibres to the musculature of the blood vessel walls and allowing thereby vasodilation, with a resulting increased influx of blood.

Summary

1. A case of ainhum occurring in a native North Carolina colored man is reported. Another case observed previously by a colleague is also reported, making a total of four cases of this disease reported directly from North Carolina.

2. Brief reviews of the incidence and nature of the disease are presented.

3. This is apparently the first time ainhum has been treated by lumbar sympathetic ganglionectomy. The results were all that could be desired. No claim is advanced that this form of surgery is indicated in all cases of ainhum, but it would seem that in advanced and intractable cases lumbar sympathetic ganglionectomy is the ideal form of treatment.

4. What we believe to be a complete bibliography is appended.

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(Grateful acknowledgment is made to Mrs. Helen Monahan and Mrs. Louise Patton, Librarian and Assistant Librarian of the Charlotte Medical Library for their untiring assistance in the preparation of this Bibliography. Some texts on diseases of the skin have been included; references to ainhum in the general medical texts are not

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(16.) Royster, H. A.: Personal communication.

included. We believe it is about complete and hope it will be of service to the physician who is interested in this curious disease.)

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COD LIVER OIL TREATMENT OF BURNS AND WOUNDS

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During the past five years the local use of crude or pure cod liver oil as a wound dressing, applied alone or combined with petrolatum or honey in ointment form, has attracted much favorable attention among European clinicians. The excellent results achieved by this method in the treatment of burns and clean and infected wounds of all types have been emphasized in nearly seventy foreign papers reporting studies involving approximately 17,000 patients. But the appearance of only a dozen papers in the American literature suggests that this widely useful therapeutic procedure is still comparatively unknown or untried in this country.

This paper is based on observations made in the treatment of 84 cases with cod liver oil at the Ellen Fitzgerald Hospital. Having first used cod liver oil as an external dressing three and a half years ago, the author was so favorably impressed with its advantages that he has employed it extensively and with satisfaction in an increasing variety of surgical conditions during the past two years, and believes that it merits wider recognition by American surgeons.

Historical Review

The fat of all fishes including the cod, together with honey, is mentioned by Pliny in the first century as an efficient cure for wounds, according to Lucke(1); and Schaer(2) states that crude cod liver oil has long been used empirically by fishermen for treating wounds, frostbites, and skin lesions. As early as 1922 Heald(3) employed cod liver oil in treating injuries, burns, and infected wounds

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with considerable success at the Royal Free Hospital. Between 1925 and 1929 a cod liver oil ointment called "*Desitin-salbe*" was used and recommended by Welkenbach(4), Lauerbach(5), Plankensteiner(6), Glasenwald(7) and others in Germany. But the practical development and widespread acceptance of modern cod liver oil wound therapy originated in the work of William Lohr of Magdeburg. In December, 1932, Lohr(8) first reported his astonishing success in the treatment of burns, ulcers, abscess cavities, osteomyelitis, infected wounds, and various pyogenic skin infections with an ointment composed of crude cod liver oil and petrolatum (Unguentolan) and with plaster of Paris bandages.

Bactericidal Properties of Cod Liver Oil

That many fats have high antiseptic power which is directly proportional to their unsaturated fatty acid content has long been known. Cod and halibut liver oils are largely composed of unsaturated fatty acids, and rank among the best antiseptics. Lohr(9) found that cod liver oil is sterile, and that staphylococci, streptococci, and B. coli are destroyed by cod liver oil in four days. Even tubercle bacilli are readily killed by the oil. Tumanskiy and Jacevitch(10) later showed that the growth of streptococci in sterilized and non-sterilized cod liver oil ceases in one hour and that staphylococci stop growing in six hours, whereas these same organisms grow for fifteen days in sterile petrolatum alone.

Cod Liver Oil Treatment of Burns

In numerous papers Lohr(11-21) has recorded remarkable results in the cod liver oil-plaster cast treatment of several thousand cases of burns and assorted wounds. In nearly a thousand cases of extensive first, second, and third degree burns he reports a mortality of only 8 per cent.

Lohr found that cod liver oil did not influence the primary shock, but was unusually effective in controlling secondary infection. In fresh burns very little debridement is done. A thick layer of ointment is spread on the burned area, and the part is immediately encased in a light plaster cast which is usually not removed for fourteen days. The ointment melts and the oil thoroughly permeates all necrotic tissues. The toxicity of the organisms is greatly reduced, if not entirely destroyed by the oil. At first there is tremendous activity with massive secretion of pus, which soon leads to separation of all necrotic material. Early demarcation occurs between the dead tissue and the

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healthy fresh granulations, which develop underneath with surprising rapidity. Areas still unhealed after removal of the plaster are treated with cod liver oil salve and bandaged. Large third degree burns are first treated with the ointment spread on sterile towels, and the application of the cast is delayed until secretion has lessened. Extensive ulcerating third degree burns often heal in fourteen days, healthy granulation and epithelization advancing rapidly. The ointment and plaster treatment is equally applicable to old, dirty, chronically infected ulcerating burned areas. In 122 cases of severe second and third degree burns thus treated no skin grafting was required; and Lohr did not once resort to skin grafting in the cod liver oil treatment of burns over a three and a half year period. In reference to this *Lancet*(22) comments: "One doubts whether such success has attended any other method."

Cod Liver Oil Treatment of Wounds

Lohr's brilliant success in the cod liver oil ointment-plaster cast treatment of clean and infected wounds of the most varied types is due not only to the antiseptic properties of the oil, but primarily to its stimulating effect on granulation and epithelization resulting in a remarkable regeneration of all sorts of tissue defects. By the use of cod liver oil and rest he substitutes tissue regeneration for extensive debridements and reconstructive plastic operations.

The method is especially applicable to extensive crushing injuries — where more tissue can be preserved—and to compound fractures, gunshot wounds, war wounds, postoperative wound cavities such as result from wide excision of malignancies, and to any injury where there remains an extensive tissue defect which had best not be closed by primary suture. In such cases, after the usual soap and water cleansing with a minimum of debridement, the wound is left unsutured, filled with the ointment, and dressed infrequently. Whenever practicable a cast is applied which is not removed for two weeks, after which time the wound is generally found healed.

This treatment is not applicable to acute inflammatory lesions, or to badly soiled wounds or gas bacillus infections. Here the usual measures of drainage, excision, sulfanilamide, and application of disinfecting agents or hot moist dressings are first indicated to overcome the infection. After this preliminary treatment cod liver oil therapy is applied to the wound or abscess cavity as in clean wounds.

Abscess cavities, amputation stumps, infected postoperative and other deep open wounds fill more quickly with granulations, epithelize more satisfactorily, and heal more rapidly with cod liver oil therapy than with any other method. In no type of wound is this excellent agent more widely useful than in the treatment of chronic, sluggish, nonprogressive wounds such as ulcerations from burns or other causes, varicose ulcers, and bedsores. Within a few days pale, stationary, discharging, infected granulations may be transformed into clean, fresh, healthy, activity and grow with unusual rapidity.

Of course syphilis, diabetes, circulatory disease, erysipelas, cellulitis and lymphangitis, as well as pyocyaneous and gas infection must be adequately treated before local cod liver oil therapy can be effective. Anemia must be corrected, and consideration must be given to all measures for improving the patient's general condition if best results are to be secured.

Possible Role of Vitamins

The beneficial effect of cod liver oil or other vitamin ointments applied locally is attributed by most investigators to their vitamin A and D content. It is well known that vitamin A administered orally exerts a protective and regenerative influence on epithelium, especially on mucous membranes. But little is known about the actual relationship of vitamins to the therapeutic action of cod liver oil used locally. It is tempting to accept the hypothesis that the results are due to vitamin A contained in the oil, but it is not yet evident what part the vitamin plays.

Types of Cases Treated in Present Series

Our series of 84 wounds and burns treated with cod liver oil comprises the following types of cases:

21 amputation stumps: 1 femur, 3 tibia and fibula, 2 humerus, 1 radius and ulna, 4 metacarpal or metatarsal, 10 phalanx.

6 compound fractures; metacarpal, metatarsal, or phalanx.

1 severe multiple compound fracture skull.

9 primary major burns: second or third degree.

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22. Annotations. The Cod Liver Oil Treatment of Wounds, Lancet, 2: 367 (Aug. 18) 1934.

6 very large ulcerating areas: 3 old burns, 2 chronic undermining ulcers, 1 pressure sore under cast.
8 deep wounds: penetrating, gunshot, postoperative, or abscess cavity.
1 acute osteomyelitis tibia.
3 chronic osteomyelitis: 1 metatarsal, 2 phalanx.
2 postoperative infected pilonidal cyst cavities.
3 varicose ulcers, chronic.
1 severe avulsion entire skin of penis. (To be reported).
1 carbuncle wound following circular excision.
22 assorted clean and infected open wounds and abscesses.

Practical Considerations

Cod liver oil is most curative when applied alone, but must usually be combined with petrolatum to form an ointment which has more body. After various trials we have found the combination of 50-70 per cent cod liver oil in autoclaved petrolatum to be most universally effective. The oil itself should not be sterilized, since this destroys the vitamins. It should be very thoroughly mixed with the vaseline. In this study pure commercial cod liver oil has been used. This is produced by chilling out the stearin and certain other fats from the crude oil, and filtering. The commercial product varies in vitamin A content from 400 to 2100 units per cc. For best results the higher vitamin content oils should be employed. Crude cod liver oil is the non-desterinated oil obtained from fresh cod livers. It is not readily available, but better results have been reported with crude oil than with the more commonly known pure commercial product. In the present series plaster of Paris casts have not generally been employed. Lohr emphasizes the importance of such plaster bandages, and in the future we plan to use them more often.

Case Reports

Case 1. L. O. K., a 49 year old refinery foreman critically burned over approximately 41 per cent of the body(23) when a blow torch ignited his clothing on September 30, 1935, was seen immediately after the accident; and for a time did well under tannic acid treatment. Before the end of the third week the coagulum separated from the second and third degree burns of the entire face and neck, both arms and hands, medial left buttock, thigh and leg, and entire perineum. These eventually healed with little infection but with considerable scarring. Because the coagulum remained densely adherent, it was excised surgically from the entire lower right extremity on the twentieth day. Figures 1 and 2 are photographs of this area taken the next day showing the entire limb except the upper anterior thigh, ankle and foot involved in a very deep fourth and fifth degree burn. The tendon of the biceps femoris is clearly exposed.

Treatment of this extensive deep ulcerating area of approximately 3¾ square feet now presented a serious problem. Lack of facilities precluded the use of a continuous saline bath. Open air treatment under a lighted tent caused unbearable pain; and the agony accompanying boric ointment dressings for forty-eight hours indicated that some other therapy was imperative. The writer then tried cod liver oil for the first time in his experience. High vitamin commercial cod liver oil was mixed with sterile petrolatum as a 50 per cent ointment and liberally applied to the wound on large gauze squares, and the entire limb was wrapped in sterile towels. Every eight hours cod liver oil was poured on the gauze, and the dressings were changed every forty-eight hours.

The immediate relief from pain afforded by this measure was striking. The oil saturated gauze never adhered to the wound, dressings were changed without pain, and the patient was comfortable and contented. In remarkably short time all sloughs separated; the wound was converted into a clean ruddy surface covered with healthy granulations, and was deemed ready for skin grafting nine days after cod liver oil therapy was started. The family delayed grafting for five weeks; but on the sixty-sixth day, using Blair's suction retractor and special graft-cutting knife(24), ninety square inches of thick split skin grafts were taken from the patient's left thigh and applied to the medial and lower anterior right thigh, entire knee and popliteal space, and part of the medial and anterior leg. A 100 per cent successful "take" resulted. Cod liver oil therapy was continued meantime, and two and a half months later at a second operation eighty-seven square inches of thick split skin grafts were transferred to the right buttock, posterior thigh, and parts of the leg with a 95 per cent successful "take". Further surgery being refused, cod liver oil treatment was continued at home.

The patient walked after eight months. Figures 3, 4, 5, and 6 show him completely healed with excellent function after nine months. He returned to his former occupation after ten months with a 5 per cent disability rating for slight heel cord shortening which soon disappeared under treatment. A recent letter states that he is in perfect health and working. There is some occasional itching and discomfort in the tannic acid scars, but no complaint from the right lower extremity treated with cod liver oil and skin grafting.

Case 2. W. N. B., a married woman of 22, was seen in consultation with Dr. Oren Moore of Charlotte to whom she had been referred nine months before; at that time she was seven months pregnant and was suffering from a severe chronic progressive undermining ulceration of the abdomen which had developed from a simple appendectomy performed elsewhere four months previously. When first seen by Dr. Moore she was delirious, a morphine addict, and a complete physical wreck. Following delivery by Dr. Moore she improved greatly, was cured of her morphinism, and after three weeks hospitalization went home with two special nurses. There the ulcer was treated with Dakin's solution and she gained 18 pounds, but returned after two months in much worse condition than before.

She then showed an ulcer larger than a square foot in area involving the ventral wall of most of the lower abdomen with deeply undermined suppu-

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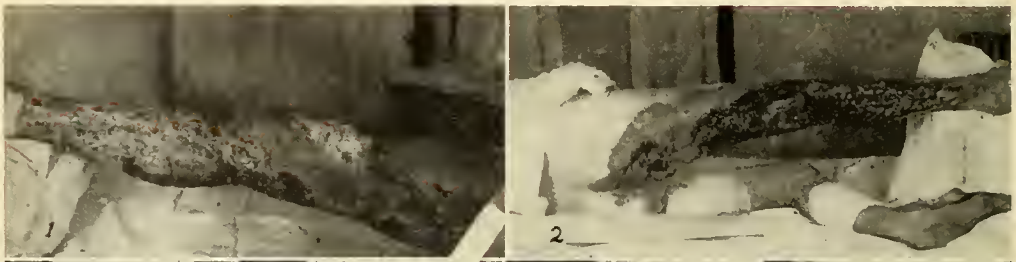
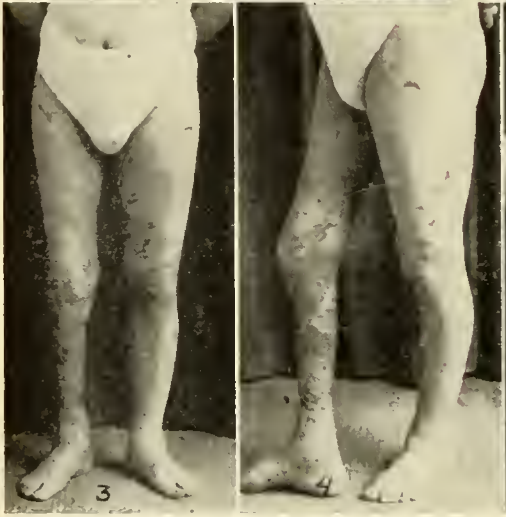
23. Berkow, S. G.: A Method of Estimating the Extensiveness of Serious Burns (and Scalds) Based on Surface Area Proportion, Arch. Surg. 8: 138, 1924.

24. Blair, V. P. and Brown, J. B.: The Use and Uses of Large Split Skin Grafts of Intermediate Thickness, Surg., Gynec. and Obst. 49: 82 (July) 1929.



Figs. 1 and 2. Appearance of right lower extremity 24 hours after surgical excision of adherent tannic acid coagulum.



Figs. 3 and 4. Final result at 9 months. Note increased scarring of lower leg which was not grafted compared to upper grafted areas. Compare with Fig. 1.

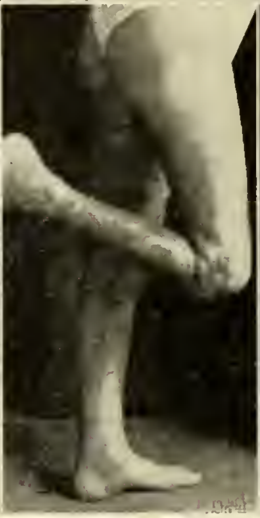


Fig. 5. Showing excellent functional result. Note absence of contracture about knee joint.

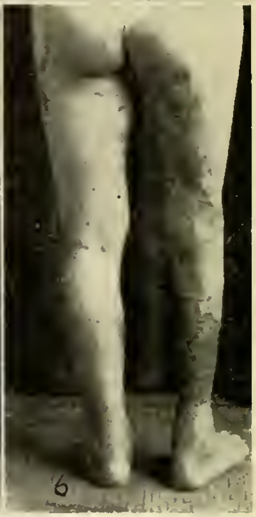


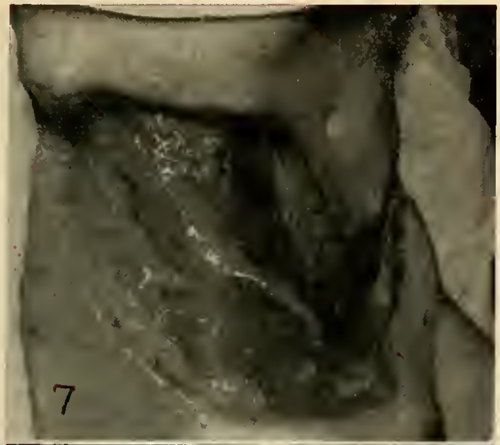
Fig. 6. Note smooth healing of thick split skin grafts. Compare with Fig. 2.

rating edges and sinuses extending to the right flank and under the pubic bone. This large ulcer had destroyed all tissues down to muscle including the fascia, exposing most of the right iliac crest, and it was bathed in pus. Suffering agony, again an addict, and toxic with high septic fever, she was in a desperate condition. Repeated blood cultures were negative; wound cultures taken throughout her illness always showed staphylococcus aureus; unfortunately anaerobic cultures were not obtained. Diabetes and syphilis were ruled out.

For two weeks the wound was dressed with bismuth violet, but the ulceration progressed until Dr. Moore performed wide cautery excision of the entire diseased tissue. This stopped the progress of the ulceration, but bismuth violet, Dakin's solution, saline and peroxide irrigations, staphylococcus vaccine, and Thiersch grafting accomplished practically no healing during the next five and a half months, and the wound edges again became deeply undermined. Anorexia and anemia developed despite repeated blood transfusions, wound dressings caused frightful pain, and her condition steadily deteriorated. Figure 7 shows the ulceration soon after operation by Dr. Moore before, emaciation became marked.

When the patient was first seen with Dr. Moore at the Presbyterian Hospital on February 25, 1938, thirteen months after the ulceration began, her weight had fallen from 135 to approximately 70 pounds, severe flexion contractures of knees and thighs were present, her morale was utterly shattered, and the wound appeared only a little smaller than in Figure 7. Although the outlook appeared hopeless, cod liver oil therapy was advised. An ointment of 50 per cent commercial oil in vaseline was spread on gauze and applied locally. Every twelve hours cod liver oil was poured on, and dressings were changed every two days. The result was miraculous. Within thirty-six hours she became comfortable and slept without pain for the first time in months. On the eleventh day she was up in a chair after three months in bed. Almost overnight the wound took on new activity and soon was covered with fresh, clean, healthy, red granulations. Large areas filled in. Within a month the size of the ulcer was reduced more than 40 per cent, its area being now about 70 square inches (Fig. 8).

Five weeks after starting cod liver oil treatment, under cyclopropane, the entire area was grafted with thick split skin grafts, after excision of the granulations and cutting away overhanging edges over the pubis. The graft covered about 72 square inches. The wound had been further prepared by continuous saline packs for the previous forty-eight hours and was apparently perfectly clean. But probably because of persisting infection under the



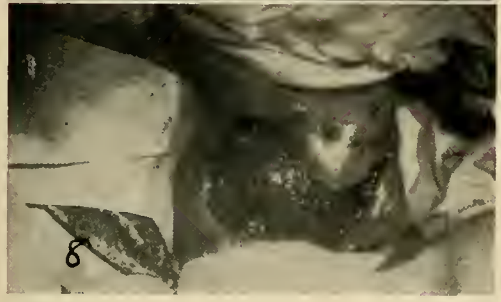


Fig. 7. Appearance of abdomen 10 months after ulceration began and 1 month after wide cautery excision of necrotic suppurating undermining wound edges.

Fig. 8. Result of one month's treatment with cod liver oil ointment. Compare with Fig. 7.

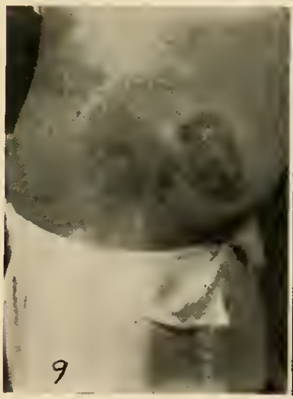
pubis and because of movement of the abdomen, the graft became infected, and only a 15 per cent "take" resulted. However, from scattered areas of viable graft epithelization proceeded under cod liver oil treatment, so that soon a third of the wound was healed. Subsequent grafting by Drs. Moore and J. Stuart Gaul and the constant use of cod liver oil completed the epithelization, and seven and a half months after cod liver oil therapy was begun the twenty-months-old wound was completely healed. No photographs were obtained.

Unfortunately, however, some of the donor sites on the thighs cut too deeply at the grafting operation became infected with the original ulcerative organism. In spite of many types of treatment these progressively ulcerated until one thigh was honeycombed with deep necrosing ulcers, which in places burrowed to the femur. In these cod liver oil was without effect. Because of flexion contractures they could not be kept free of discharge and continued to burrow hopelessly. For many months the patient's general condition improved, but she suddenly developed lobar pneumonia and died nine months after cod liver oil therapy was instituted. This tragic case was seen by many consultants. All agreed that the action of cod liver oil on the ulcerating abdomen was strikingly beneficial.

Case 3. P. A., a 34 year old laborer was referred by Dr. J. J. Goudelock for appendectomy February 16, 1938. The McBurney incision required upward enlargement for removal of an immovable deeply placed retrocecal subacute appendix reaching to the liver. Operation was difficult and heavy traction necessary. Post-operative ileus with serious vomiting almost proved fatal, and, together with severe distention, caused the wound to break down. By the twelfth day grave infection had completely ruptured the wound and destroyed the entire belly wall over an area 4½x2½ inches in size, within which the the intestines, covered with exudate, lay free. Simultaneously a larger necrosing area of cellulitis developed posterolaterally in the right flank. With alarming rapidity all soft tissues between the two wounds were destroyed down to the fascia by a progressive undermining ulceration which spread 4 inches under the skin deep into the right flank. Here a counter incision was made for drainage, and on the sixteenth day all wounds, including the naked intestines, were dressed with 50 per cent cod liver oil-petrolatum ointment on gauze.

Progressive ulceration stopped immediately, infection rapidly subsided, and excellent healing began. On the fortieth day the patient was discharged, and at home healing was completed under cod liver oil therapy within three weeks. (Fig. 9.)

Some months later the extensive ventral hernia was successfully repaired, using Babcock's rustless steel wire throughout. The scar was found widely adherent to the underlying intestines. Figure 10 illustrates the final appearance of the wound twenty days after herniorrhaphy. The patient is now in good health and doing manual labor.



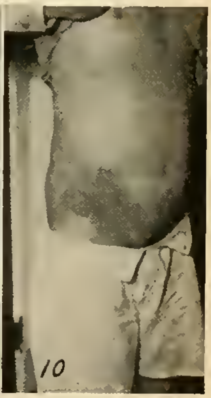


Fig. 9. Showing excellent healing 6½ weeks after beginning treatment with cod liver oil ointment. Note large postoperative ventral hernia. See also counter incision in right flank indicating extent of the ulceration.

Fig. 10. Final appearance after successful repair of large ventral hernia.

Case 4. C. D., a 20 year old bride, alighting from an airplane was struck twice on the head by the revolving propeller blades, and sustained two severe compound fractures of the right parietal-frontal skull, with loss of at least 2 ounces of brain substance. Desperate emergency treatment by Dr. J. J. Goudelock prevented death from hemorrhage and shock. When seen after twenty-four hours she was unconscious, and the wound had merely been covered with sterile gauze with no attempt at any cleansing, debridement, or closure. The approximate appearance of the wound is shown by Figure 11, which is an artist's drawing from description. The right wound was about 6½ inches long, extend-

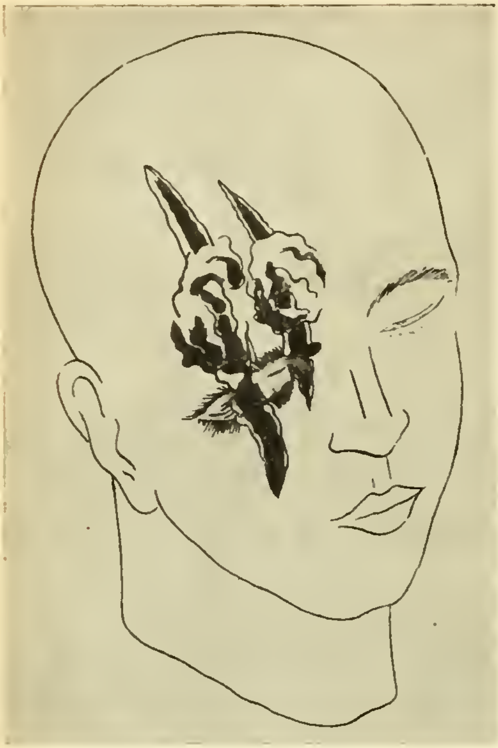


Fig. 11. Artist's drawing from description demonstrating very severe compound fractures of skull caused by two blows of an airplane propeller. Note downward dislocation of right orbit and of large bone fragment which was freely movable between the two fracture clefts.

ing from right parietal skull down through the orbit, malar bone, and cheek. The right eyeball was ruptured posteriorly and the orbit displaced downward. The second was 4½ inches long and parallel to the first, extending from about the mid frontal skull through the inner canthus. These two clefts of the skull were each 1 cm. wide and 2 inches apart. At least 2 ounces of lacerated brain tissue was extruded, and the bone flap between the fracture clefts was loose and movable. The left eye was normal, the pupil was contracted but reacted to light, the knee jerks were hyper-active, there were no abnormal toe signs, and no apparent paralysis.

She was seen by Drs. Goudelock, James Gibbon, F. C. Smith, G. M. Smith, K. E. Neese, and myself. All agreed that they had never seen so extensive a cranial injury and that inevitably death would soon occur. It was further agreed that any immediate cleansing, debridement, or closure was contra-indicated. The usual general measures were pursued, and the wound was simply dressed with wet saline gauze and bandaged.

On the third day, at my suggestion, pure commercial cod liver oil was used to saturate gauze which was applied directly to the lacerated brain substance and to the entire wound. The dressing was changed daily. Under this treatment the patient improved against all expectation. In spite of some neck stiffness and fever of 100-103 degrees her condition improved. By the third week she took nourishment, regained sufficient consciousness to understand speech and obey commands, and even wrote legible notes to her husband, but never spoke a word. The wounds remained at all times relatively clean; there was no gross infection. The extruded brain soon separated; by the third week healthy granulations were filling the defects in skull, scalp, and cheek—the latter being closed by three sutures—and the discharge was moderate. On one occasion wet saline dressings were substituted for cod liver oil for four days, whereupon the temperature rose promptly to 105 degrees with a pulse of 150, and she rapidly grew worse. Improvement soon followed reestablishment of cod liver oil therapy.

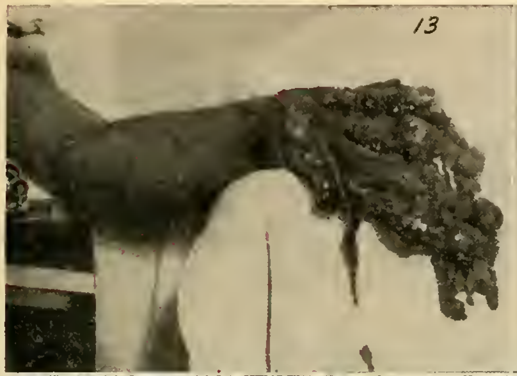
The wound continued to improve, but after the fourth week a fistula began to discharge clear spinal fluid, apparently from the right ventricle. She became increasingly comatose, developed left-sided tremors and weakness, and became emaciated. Although the condition of the wound continued to improve, the fistula eventually closed, and she died on the fifty-first day, apparently from the resulting increased intracranial pressure.

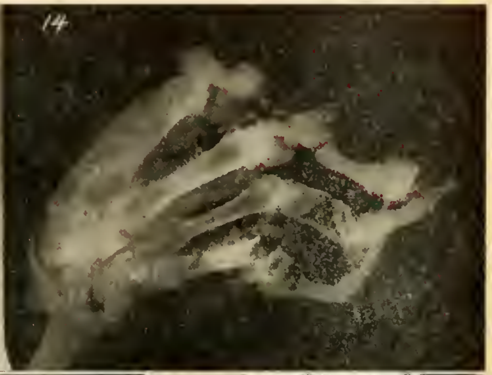
This is the first case reported in this country in which cod liver oil has been used directly as a wound dressing for injured brain tissue or compound skull fracture. It was the consensus of opinion that this treatment reacted favorably upon the brain substance, hastened separation of lacerated extruded brain, greatly decreased infection, and rapidly accomplished satisfactory wound healing, and that death ultimately occurred after seven weeks from a low grade encephalitis and increased intracranial pressure. The method is recommended in other cases where attempted wound closure would certainly precipitate death.

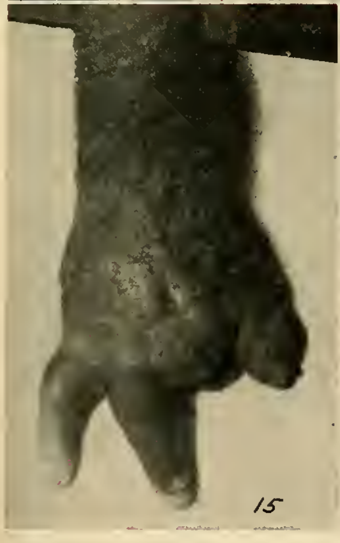
Case 5. J. S., a 62 year old farmer, was rushed to the hospital June 8, 1938, immediately after his gloved right hand had been mangled in a threshing machine. There were multiple compound comminuted fractures of thumb, all fingers, and three metacarpals (Figs. 13 and 14.) The thumb was nearly severed by multiple lacerations. There was complete avulsion of the index and middle fingers, which hung only by shreds and were not viable. The fourth and fifth fingers were very gravely lacerated, while all soft tissues of the dorsum had been torn from the hand with extensive tissue loss, division of all extensor tendons, and practically complete disintegration of the entire hand.

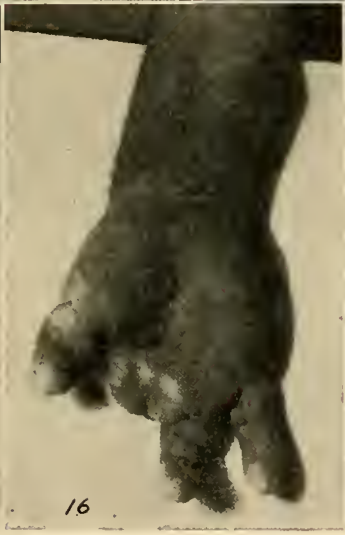
After treatment of shock and administration of combined tetanus and gas gangrene antitoxin, the patient was etherized, the extremity thoroughly washed with soap and sterile water, and extensive plastic repair accomplished, especial attention being devoted to minimal debridement and careful preservation of all viable tissues. After completing the amputation of the index and middle fingers, all comminuted compound fractures of thumb and fingers were reduced, surviving tendons sutured with silk, dorsal soft tissues reestablished, index and middle metacarpal exposed ends covered with tissue, and appropriate drainage was placed under the dorsal flap. No skin sutures were used, and the injury was dressed with continuous warm saline gauze packs, and splinted. Fever of 102 degrees on the second day fell to normal on the fifth day; no infection occurred.

On the fifth day the wound was liberally dressed with 50 per cent cod liver oil-vaseline ointment saturated gauze, and the patient discharged. The hand was dressed in the O. P. D. for ten weeks, and healing was complete after several months. (Figs. 15, 16, and 17.) There is good motion of thumb and fifth finger, which can be approximated, giving a useful hand with which he is able to plow. Considering the gravity of the injury this is an ex-









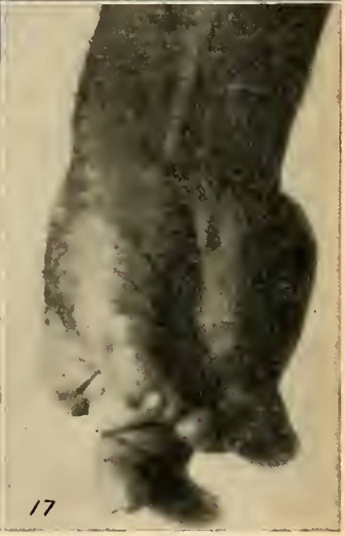


Fig. 13. Showing extensive soft tissue destruction and practically complete disintegration of hand.

Fig. 15. Final result 6 months after repair and treatment with cod liver oil ointment. Note covering of dorsum of hand and of metacarpal ends. Compare with Figs. 12 and 13.

Fig. 14. Roentgenogram of hand.

Fig. 16. Final appearance of palmar surfaces of hand.

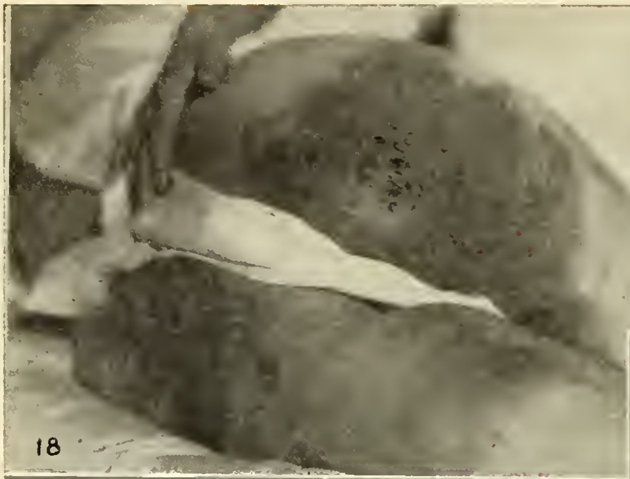
Fig. 17. Illustrating good functional result. There is good movement of thumb and fifth finger. Note ankylosis of fourth finger. Compare with Fig. 13.

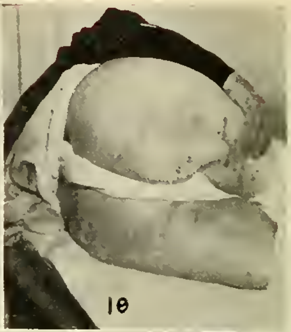
cellent result, and must be attributed largely to cod liver oil.

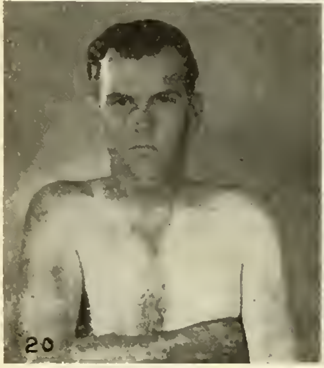
Case 6. Mrs. L. R., age 83, was referred on January 17, 1938, by Dr. C. A. Bolt of Marshville, fifteen days after sustaining severe second and third degree burns of approximately 17 per cent of the body when her gown ignited from the fireplace. The burns involved much of the posterior thighs and perineum, the entire buttocks, and most of the lumbar back. No debridement was done by Dr. Bolt, but cod liver oil gauze dressings were applied every forty-eight hours. On admission she appeared vigorous and had little pain; the burned areas were fairly clean and showed many islands of healthy granulation, but some crusting and discharge.

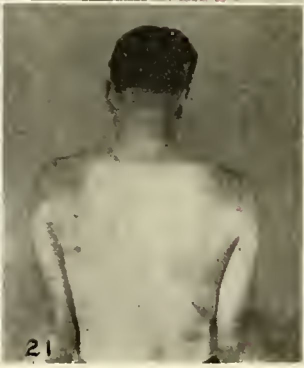
She was placed on her abdomen under a burn tent and dressed every two days with 50 per cent cod liver oil-vaseline ointment on gauze. The daily temperature ranged from 97-100 degrees, falling to normal after the eighth day. Seven weeks after being burned she was up in a wheel chair, and went home healed after eight weeks. Figure 18 shows the burns some days before discharge, and Figure 19 reveals only moderate scarring after fourteen months. There is occasional discomfort in the right scars; but the progress and recovery of this severely burned 83-year-old woman under cod liver oil therapy was considered remarkable.

Case 7. G. N., a 35 year old farmer with arrested pulmonary tuberculosis, received first degree burns of the face and severe second and third degree burns of the neck, shoulders, extensor surfaces of both arms and hands, both knees, and dorsum of both feet, involving about 16 per cent of the body surface, when exposed for about forty seconds to reflected heat under the roof of his burning barn on November 10, 1938. He was treated by Dr. K. E. Neese, who immediately applied 50 per cent cod liver oil-petrolatum ointment without debridement. When referred by Dr. Neese twelve hours after the accident his Hgb. was 110, and all the burns except









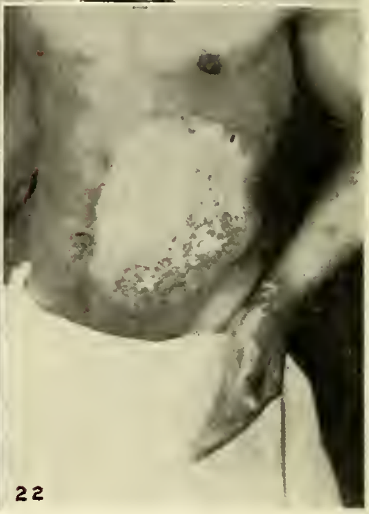


Fig. 18. (Case 6) Appearance of burns after 6 weeks of cod liver oil treatment. Epithelization nearly complete.

Figs. 20 and 21. (Case 7) Showing excellent healing with minimal scarring 9 weeks after burn.

Fig. 19. (Case 6) Final appearance 14 months after burn. Note slight scarring and absence of keloid. Compare with Fig. 18.

Fig. 22. (Case 8) Appearance after 4 months, showing very little scarring considering depth and extent of the burn.

the face were covered with large blisters from which he had already suffered considerable fluid loss. The vesicles were aseptically opened, dead skin was excised, and the areas were washed with boric solution. Cod liver oil salve on gauze was continued and changed every two days. Considerable infection occurred and fever reached 102.8 degrees, but fell to normal on the thirteenth day. Sloughs soon separated and granulation was rapid. He was discharged on the nineteenth day, and the few remaining deeply burned areas on the right shoulder and forearm healed under bismuth violet by the twenty-fourth day. This patient's burns healed very rapidly in spite of infection. Figures 20 and 21, taken after nine weeks, show minimal scarring. Four months later, however, severe keloids had formed over the right shoulder and forearm.

Case 8. E. Y., a 20 year old negro farmer, rolled into the fireplace while intoxicated and sustained severe first, second, and third degree burns of the left hand, wrist, forearm, and most of the left abdomen—altogether about 12 per cent of the body. Dr. J. W. Ormand opened all blisters, removed the burned skin, and applied 50 per cent cod liver oil-petrolatum ointment covered with waxed paper. Some infection developed after the fifth day, but was controlled by wet magnesium sulphate dressings for forty-eight hours, and the burns healed well. He was discharged after six weeks and was entirely healed in seven weeks. Figure 22 shows the excellent final result photographed after four months.

Comment

In the limited time available it is impossible to discuss the admirable results secured with cod liver oil in practically all of the 84 cases on which this study is based. But it is hoped that these few representative cases presented in detail have demonstrated many of the advantages of the cod liver oil method. Suffice it to state that our experience in this series strongly confirms the majority of the claims made by other investigators.

Of course cod liver oil ointment is no

panacea for all the evils encountered in the process of wound healing. In certain rare instances the method may prove ineffective. Exuberant granulations at times require trimming and the application of silver nitrate. Occasionally it is best to change to bismuth violet or Bettman's⁽²⁵⁾ oxyquinoline scarlet R. ointment, or to use hot wet saline, boric, or magnesium sulphate dressings for a while. Whenever indicated, skin grafting should be employed without delay.

The disadvantages are few and relatively unimportant. In treating extensive burns or ulcerations large amounts of the ointment are needed, and the expense is considerable. But, as Lohr points out, the additional cost is more than compensated by the patient's more rapid healing and return to health. In our experience the disagreeable odor of fish oil, though occasionally objectionable, has not proved seriously unpleasant to the patient. This is easily controlled by sprinkling a few drops of turpentine on the dressings. Rancidity seldom occurs, since the ointment is self-sterilizing and keeps indefinitely in dark containers; and even rancid oil does not harm the wound. No ill effects have been reported from hyper-vitaminosis. Irritation and maceration of the skin do not occur.

Summary and Conclusions

1. Results with this method are described in case reports, including the first record of the use of cod liver oil on the naked brain in this country, the first cure of chronic progressive undermining ulcer of the abdomen with cod liver oil to be reported, and the first successful application of cod liver oil ointment to the intestines to appear in the literature.

2. From a study of 84 cases consisting of 75 assorted clean and infected wounds and 9 fresh major burns treated by the writer and other members of The Ellen Fitzgerald Hospital staff it is concluded that as a rule more tissue is saved, infection is better controlled, tissue regeneration is more accelerated, less scarring occurs, pain is more completely eliminated, hospitalization is shorter, and a better final functional result is achieved by the use of cod liver oil-petrolatum ointment than with other methods of therapy.

3. These conclusions apply especially to the treatment of wounds, in which the author's observations have fully convinced him that cod liver oil offers a superlative method of therapy universally applicable to the treatment of wounds of practically every variety.

4. During the three and a half years in which this method has been employed by the writer, in no single case has it been necessary to use Dakin's solution on any wound—cod liver oil ointment combined with the judicious use of hot saline applications having displaced this procedure.

5. It is emphasized that external cod liver oil therapy is contra-indicated in the presence of acute infection. Its employment in the hope of combating such infection is condemned. Only after active infection has been controlled by means of all commonly accepted surgical measures will cod liver oil be effective.

6. Our small series of 9 cases in which cod liver oil ointment was used as a primary dressing for fresh major burns does not warrant final conclusions, but the writer believes the method ideal in the treatment of burns of the face, perineum, extremities, and places where body surfaces come in contact. In other fresh burns Bettman's⁽²⁶⁾ tannic acid-silver nitrate method is preferred. In old ulcerating burns the oil is without a peer.

Discussion

DR. RANDOLPH JONES, JR. (Durham): I want to congratulate Dr. Hardin on this really amazing group of cases which he has shown us here.

We have been using cod liver oil since 1933. I am sure all of you have noticed the striking freedom from pain that follows its application.

I remember one case that came to my care. Some students during initiation had smeared a boy liberally with collodion, and while he was sitting in front of an open fire he was painfully burned. The relief he experienced following the application of cod liver oil was dramatic.

I think Dr. Hardin is to be congratulated on the results he has obtained.

DR. C. L. HAYWOOD, JR. (Elkin): Mr. Chairman, I have had a very limited experience with the use of cod liver oil. I have used it as a 50 per cent mixture with linseed oil to help clean up granulations and promote epidermization.

I have had my best luck with it in closing paranasal sinuses. Sometimes they are very slow to granulate and heal. While this is usually a minor operation with little danger to the patient, it is a distressing thing to have to go with a granulating wound for such a long time. Cod liver oil is an excellent method for promoting a rapid and clean closure of the sinuses.

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MALARIA STUDIES AND INVESTIGATIONS IN NORTH CAROLINA

by
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Introduction

In 1933 the State Board of Health, cooperating with the U. S. Public Health Service, began the most extensive malaria control program ever undertaken in North Carolina. The Civil Works Administration was willing to furnish labor, materials, and equipment for the eradication of any mosquito breeding areas which we designated as menaces to the public health. Due to lack of previous malarial studies the endemic areas, with the exception of those established merely by reputation, were unknown.

Entomological investigations had been limited to scattered areas, and engineering personnel with specialized training in malaria control was not available for the supervision of a program of this magnitude. As a result, the program was largely conducted on the hypothesis that all bodies of fresh water breed anopheles mosquitoes and should be drained if the population in the vicinity were large enough to justify the cost. No apology is made for this procedure. We did the best that we could under the circumstances. The subsequent decline in malaria in numerous localities where projects were carried through to completion shows that enormous benefits were derived. Had we known the location of malaria foci and sources of anopheline breeding, projects would have been selected in areas where the most good could be accomplished and the resulting benefits would have been more than doubled. This experience disclosed the necessity for a more thorough knowledge of the location and extent of malaria within the state.

Malaria Investigation and Control Unit

Conforming with the recommendation of the United States Public Health Service that each state which had a malaria problem install a special investigation and control unit, the North Carolina State Board of Health in 1937 set up such a unit under the direction of Dr. J. C. Knox, Director of the Division of Epidemiology. Its main purpose is to develop the scientific understanding and control of malaria in North Carolina on a county-wide basis, in collaboration with the local health departments. In addition to Doctor Knox, the unit has one engineer, one entomologist and two laboratory technicians, all of whom have had specialized training in Malariology.

Before a detailed malaria survey is begun in a county, the local health officer agrees to allow his personnel to take blood slides from all school children through the first six grades. After the slides are examined the precise location of the home of each child with a positive slide is established with a symbol on a large county map. The density of these symbols shows the foci.

In areas thus shown to be highly malarious detailed malariological studies are made, which include:

1. A spot map showing: all cases of malaria disclosed by house to house interviews and verified by the family doctor; all positive bloods; all water and water courses within one mile of the area; and all areas found to be breeding Anopheles quadrimaculatus mosquitoes.
2. A study of the breeding habits and distribution of the local vector.
3. A determination and cost estimate of the most effective and feasible methods of control.

Due to the limited facilities and amount of detailed work involved, it is impossible to make detailed surveys in more than two or three counties each year. Surveys are made in counties other than those participating in the program in the small areas where serious malaria problems are known to exist.

Survey Results

In selecting counties to be covered by detailed surveys it was desired that the most malarious counties be taken first. The determination of which counties had the most malaria presented a difficult task, as morbidity reports were not required on malaria prior to May, 1937. This made it necessary to rely entirely on mortality statistics. In compiling the deaths from malaria over a five-year period it was found that Robeson

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County led the State with thirty, while Edgecombe County was a close second with twenty-nine, with Beaufort, Pitt and Wayne Counties following in the order named.

In the fall and winter of 1937, 4,629 blood slides were taken from school children in Edgecombe County and 4,932 from those in Robeson County. Not all of the schools were taken in either of these counties, as work was discontinued because of the lateness of the season. Previous experience had shown that a true index could not be obtained at any season other than the fall of the year.

Positive results ranged from none, in some schools, to 62 per cent at Harper's Ferry Indian School in Robeson County. In Robeson County 2.2 per cent of the slides taken were positive, while in Edgecombe County 3.9 per cent were positive. In Robeson County the Negro schools were 2.4 per cent positive, the white schools 1.1 per cent positive, and the Indian schools 5.5 per cent positive. In Edgecombe County 5.9 per cent of tests from Negro schools were positive, and from white schools 1.3 per cent.

A recapitulation of results from the two counties shows that of 5,586 slides taken from white children 66, or 1.2 per cent, were positive; of 2,893 taken from Negro children 160, or 5.5 per cent, were positive; and of 1,082 taken from Indian children 60, or 5.5 per cent were positive.

The theory that Negroes are more susceptible to estivo-autumnal and whites to vivax was strengthened by the findings of these surveys. Sixty-five per cent of the infected Negroes had estivo-autumnal, 29 per cent vivax, and 6 per cent showed mixed infection. Among whites, 39 per cent had estivo-autumnal, 59 per cent vivax, and 2 per cent had mixed infections. Susceptibility among Indians conformed closely with that among whites. Twenty-three per cent of them had estivo-autumnal, 70 per cent vivax, and 7 per cent mixed infections.

The homes of all children with positive slides have been located on county maps, and detailed investigations are completed or in progress in all endemic communities thus established. Spot maps showing actual pictures of the conditions as they exist have been instrumental in getting several large drainage projects started, and have been very helpful in persuading pond owners to apply voluntary control measures to impounded waters which were in existence prior to the adoption of the State Board of Health's regulations governing impounded waters.

During October and November of 1938 the local health departments in Halifax, Wayne and Pitt Counties took blood slides from all school children in the first six grades, and the survey begun in Edgecombe County in 1937 was completed. A total of over 22,000 blood slides were taken. These have been stained and prepared for examination. It will take the two laboratory technicians all the year to examine them; so results are not yet available.

It is hoped that in counties where enough malaria is disclosed to justify it, funds will be provided by the local authorities for the establishment of permanent malaria control programs to be operated under the supervision of the local health departments, cooperating with the State Board of Health.

The interest of one of us (Parks), as local health officer, in the malaria problem dates back to 1936, when a malaria survey was made in Edgecombe County, in which 2703 slides were examined. These slides were made by W. P. A. nurses and examined through the cooperation of the State Board of Health and the United States Public Health Service at Washington.

The purpose of the survey then was (1) to determine the incidence of malaria in the county, (2) to find where W. P. A. drainage projects should be located, (3) to stimulate the interest of the public in our malaria problem, and (4) to serve as a public health investigation project and a record for future reference in malaria control problems.

The survey that was done in 1936 in Edgecombe has been continued to date, and has accomplished more than we anticipated. From 1936 through 1938 approximately ten thousand slides have been made.

The Edgecombe County officials have taken a great deal of interest in the malaria problem, and have given considerable financial support. A drainage district has been formed which is now being dredged. This district, when completed, will improve our malaria situation and restore some good farm land that has been useless for the past several years because of floods. A number of small drainage projects have been completed through the cooperation of the W.P.A. and individual land owners. The city of

Tarboro has employed a full time mosquito inspector for the past two years during the mosquito season, and the results of his work has been gratifying. His services are also available this year.

If we go into the malaria problem we find that malaria is a problem of the entire state, and not limited to Edgecombe County or the eastern part of the state. A map of North Carolina would show that malaria deaths were found in sixty-seven of the one hundred counties during the years 1934-1938. The number varies from one death in twelve counties to forty-one in Beaufort, thirty-five in Edgecombe, and three in Robeson County —an average of one death per county each year. Malaria deaths occur in all sections of the state.

Malaria was made a reportable disease in this state in May, 1937. Since that time fifty-nine counties have reported this disease. We also know that the majority of cases are not reported by physicians, and that many cases of malaria are not attended by a physician.

Malaria is a health problem that many health departments have probably overlooked in our state. A report of the number of deaths attributed to malaria as compared with the number from dipththeria and typhoid fever is interesting:

	1937		1938	
	By Place of Residence		By Place of Death (Provisional)	
Disease	Counties With Deaths	No. of Deaths	Counties With Deaths	No. of Deaths
Typhoid F.	39	75	36	70
Diphtheria	73	167	60	180
Malaria	38	90	35	78

These figures show that malaria is one of our leading public health problems and that work must be done to combat it.

The Doctor-Patient Relationship.—The professional man is primarily a learned man, a man who depends upon his knowledge as his stock in trade. He has specialized knowledge over and above that of the common man in relation to some particular topic, be that law, theology, accountancy, teaching, or medicine. Perhaps the thing that distinguishes him more than anything else is the peculiarly personal relation to the client or patient which he enjoys, a confidential relationship, a situation in which he is adviser, guide and friend, a situation in which his interest does not cease when the particular transaction is concluded. It follows as a corollary that he is an individualist, one who functions far more efficiently without regimentation or coercion, but rather requires the opportunity to utilize freely his own initiative and judgment within the limits of his professional code of ethics.—Winfred Overholser: The Broadening Horizons of Medicine, Science 90: 2338 (Oct. 20) 1939.

LOW BACK PAIN AND SCIATICA WITH SPECIAL REFERENCE TO RUPTURE OF THE INTERVERTEBRAL DISC

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Low back pain associated with pain radiating along the distribution of the sciatic nerve is a commonly observed clinical syndrome following certain types of relatively minor injuries to the lumbar spine. Indeed, these disturbing complaints may develop without any clear history of antecedent trauma. Orthopedic surgeons have established a large number of entities which may produce these symptoms, embracing various possible lesions of low back structures. In this complex group are included as etiological factors: strains, of the lumbo-sacral and sacroiliac articulations; developmental abnormalities at the lumbo-sacral junction; narrowing of the lumbo-sacral interspace; spondylolithesis; the facet syndrome; arthritis; myositis; fascial contractures; and postural abnormalities. Orthopedic surgeons have devised certain therapeutic procedures to relieve such disturbances, ranging from conservative measures of bed rest, traction, supportive appliances, manipulation, and epidural injection to such radical measures as fasciotomy and fusion of the involved bony structures. Although no exact statistical figures are available, probably 90 per cent of individuals with low back pain, often associated with sciatica, may be considered essentially orthopedic problems in diagnosis and treatment.

There remains, however, a numerically small group of individuals with the same complaints of low back pain and sciatica in whom these orthopedic disturbances cannot be demonstrated, and in whom the usual methods of treatment are ineffectual. This group includes those patients with actual compression of the roots of the cauda equina from a ruptured intervertebral disc, from a hypertrophy of the ligamentum flavum, from a tumor of the cauda equina, or from an arachnoiditis involving this region. It like-

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wise includes those patients with an intrinsic lesion of the cauda equina, such as radiculitis, caused by trauma, infection or a chemical agent. Finally, it includes those patients who are malingerers or who have developed a traumatic psychosis with their somatic complaint referred to the lumbar spine.

This paper will record our experience with 39 patients in this latter group on whom lipiodol studies were done, and will discuss more explicitly 25 patients in whom the clinical syndrome of a ruptured intervertebral disc was recognized and treated.

The historical development of this clinical picture is a record of repeated isolated observations, from the first report of an injury to an intervertebral disc by Kocher(1) in 1896, to the summation of this experience in the classical paper by Mixter and Barr(2) in 1934. In 1911, Goldthwaite(3) first suggested that injuries to the intervertebral disc might be a cause of low back pain and sciatica. As neurosurgeons developed spinal cord surgery, there appeared in the literature many reports of the removal of enchondromata arising from the intervertebral disc —among them the papers of Adson(4), Dandy(5) and Elsberg(6). Noteworthy is Dandy's statement refuting the current conception of these tumors as true neoplasms, and suggesting rather their traumatic derivation. In 1932 and later, Schmorl(7) described degenerative changes in the annulus fibrosus of the disc with anterior, posterior and intravertebral ruptures of the nucleus pulposus—observations that were shortly followed by the presentation of the complete clinical picture by Mixter and Barr. That the syndrome has a sound anatomic-pathologic status has been amply demonstrated by Batts(8), who has pointed out ruptures of the nucleus pulposus of varying degrees in 18 per cent of 50 cadavers; and by Naffziger(9) and his associates, who have made detailed anatomical studies of the region involved in this syndrome. That it is of profound clinical importance may be judged by the succession of clinical and radiological reports that have appeared since 1934(10).

CLINICAL DATA—25 CASES

Sex: 24 males; 1 female

Age: average, 36; oldest, 53; youngest, 21

History of Trauma: positive, 17; negative, 8

Symptoms	Present Series	Reported Cases
1. Average Duration	42 months	48 months
2. Low Back Pain	25 cases	58%
3. Sciatica	25	92%
4. Intermittent Symptoms	24	86%
5. Accentuated by Coughing, Etc.	9	39%
6. Accentuated by Movement	23	—
7. Paraesthesiae	12	49%
8. Weakness	9	—

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10. a Mixter, W. J. and Ayer, J. B.: Herniaation or Rupture of the Intervertebral Disk into the Spinal Canal: Report of Thirty-Four Cases, New England J. Med. 213: 385 (Aug. 29) 1935.
    b Hampton, A. O., and Robinson, J. M.: The Roentgenographic Demonstration of Rupture of the Intervertebral Disk into the Spinal Canal after the Injection of Lipiodol, with Special Reference to Unilateral Lumbar Lesions Accompanied by Low Back Pain with "Sciatic" Radiation, Am. J. Roentgenol. 36: 782 (Dec.) 1936.
    c Barr, J. S.: "Sciatica" Caused by Intervertebral Disk Lesions, J. Bone & Joint Surg. 19: 323 (April) 1937.
    d Barr, J. S., Hampton, A. O., and Mixter, W. J.: Pain Low in the Back and "Sciatica", J. A. M. A. 109: 1265, (Oct. 16) 1937.
    e Love, J. G., and Walsh, M. N.: Protruded Intervertebral Discs, J. A. M. A. 3: 396, (July 30) 1938.
    f Barr, J. S.: Relationship of Intervertebral Disk to Back Strain and Peripheral Pain (Sciatica), Surgery, 4: 1 (July) 1938.
    g Walsh, M. N., and Love, J. G.: The Syndrome of the Protruded Intervertebral Disk. Proc. Staff Meet., Mayo Clin. 14: 230 (April 12) 1939.

Objective Signs—Orthopedic		
1. Localized Tenderness	13	—
2. Paravertebral Muscle Spasm	18	—
3. Change in Lumbar Lordosis	10	—
4. Restriction of Lumbar Flexion	19	—
5. Scoliosis	9	—
6. Positive Leg Raising Test	25	82%
Objective Signs—Neurologic		
1. Sciatic Tenderness	7	57%
2. Motor Weakness and Atrophy	10	26%
3. Sensory Loss	17	31%
4. Reflex Changes	18	57%
5. Fibrillary Twitchings	2	—
6. Negative Examination	2	10%
Examination of Spinal Fluid		
1. Positive Queckenstedt	0	10%
3. Cell Count	Normal	Normal
2. Reverse Queckenstedt	—	—
4. Total Protein		
Not Done—2		
Above 80 mg./100 cc.—12	Above 40 mg./100 cc.—80%	
Above 40 mg./100 cc.—11	Below 40 mg./100 cc.—20%	
Localization of Ruptured Disc		
Lumbar III	3	10%
Lumbar IV	12	40%
Lumbar V	10	48%
Above Lumbar III	None	2%

Twenty-four of the patients in this series were active, vigorous males, ranging in age from 21 to 53 years. In 17 of the patients, a definite history of trauma preceding the onset of symptoms was obtained. The remainder, it was noteworthy, volunteered the history of heavy physical labor as a part of their daily existence. The character of the inciting trauma was typically that obtained by forceful hyperextension of the lumbar spine, a movement frequently developed in the course of lifting a heavy weight. Injuries and positions that produce such hyperextension exert a rending force upon the posterior longitudinal ligament, and by compression of the disc space anteriorly may rupture the nucleus into the dural canal. Such an acute accident may be precipitated by a simple trauma, and patients may be aware of a "snap", followed by immediate pain in the lumbo-sacral region. On the other hand, the low back pain may occur after one of repeated and comparatively mild traumatic insults to this area—evidence for the supposition advanced by Schmorl that degenerative changes of traumatic origin may take place in the posterior longitudinal ligament.

The presenting symptom of low back pain, aching and throbbing in character, was present in all of the patients in this series. This pain may be quite mild and overshadowed by the severe, lancinating pain of the "sciatica" that may develop at once following the trauma or may appear at a later date. All of the patients in this series developed sciatic pain. The average duration of these distressing symptoms was forty-two months, with the shortest time interval between onset and operative intervention being three weeks, and the longest twenty-two years. The majority of these patients could accentuate the sciatic pain by coughing, sneezing, and by flexion movements of the lumbar spine. A smaller number noticed paraesthesias over the areas of pain distribution, and motor weakness, often accompanied by actual muscle wasting. Fortunately, the attacks of pain are intermittent, and a history of an acute episode, with effective but slow conservative therapy, to be shortly followed by mild trauma and a second acute episode is usually obtained. It is apparent then that the symptoms of pressure upon one or more roots of the cauda equina by a ruptured intervertebral disc do not materially differ from what our orthopedic colleagues have termed lumbo-sacral or sacro-iliac strain with sciatica.

A clinical diagnosis of a ruptured intervertebral disc may best be obtained by careful partition of clinical evidence into that derived from orthopedic examination, that derived from neurologic examination, that derived from examination of the spinal fluid, and finally that derived from roentgenography. In this series, circumstances have allowed these studies to be carried out by individuals qualified in each particular field.

Only a cursory orthopedic examination of a patient with this lesion is necessary to elicit the fact that the individual is seeking by postural readjustment to immobilize the lumbar region and to relieve pressure upon the involved sensory root. Paravertebral muscle spasm, straightening of the normal lumbar lordosis, elevation of the pelvis on the affected side, with scoliosis and restriction of lumbar flexion, were noted in a majority of the patients in this series. Localized tenderness in the transverse process adjacent to the ruptured disc was not an unusual finding. All of the patients demonstrated sciatic pain or low back pain with the straight leg raising test—a procedure which fundamentally falls into the realm of neurology, although commonly accepted as an orthopedic diagnostic maneuver.

Lasegue's sign, as we have noted, was invariably present in our patients, but actual tenderness over the sciatic nerve was an infrequent finding. Eighteen of the patients in this series exhibited an absent or diminished Achilles tendon reflex, and 17 patients exhibited a varying degree of segmental sensory loss, predominating in the dermatomes immediately below the actual site of the lesion. It has been stated by Barr and his associates that neurologic changes may be totally absent in half the cases of ruptured intervertebral discs. We are inclined to agree with Love(10) and Fincher(11) that a meticulous neurological examination will demonstrate neurological deficit in the majority of cases. Indeed, the repeated finding of neurological deficit in patients with sciatica without ruptured intervertebral disc or other types of mechanical pressure upon the roots of the cauda equina has opened, in our opinion, a fertile field for further study. Only two of our patients presented normal neurological findings, if the Lasegue test is excepted. Ten of the patients exhibited motor weakness and measurable muscle atrophy.

In two patients, rough fasciculation was noted in the calf musculature. It appears obvious, however, that patients with a negative neurological examination, and even those with symptoms only suggestive of a ruptured intervertebral disc should be given the benefit of spinal fluid studies.

The estimation of the total protein content of the spinal fluid is the only laboratory examination of any value in the further diagnosis of ruptured intervertebral discs situated in the lumbar region. The total protein was 40 mg. or more per 100 cc. in 11 cases in this series, and 80 mg. or more per 100 cc. in 12 cases. In two cases referred from other institutions after lipiodol injection, the total protein content of the spinal fluid was not determined. Elevation of the total protein of the spinal fluid is apparently a measure of root irritation, and only in rare instances of complete block by the displaced fragment of disc tissue is it a measure of circulatory deficiency. It has been shown that a false normal reading may be obtained if the lumbar puncture is made at a distance from the affected root, or if too large a quantity of fluid is removed for chemical study. Routinely, therefore, such diagnostic lumbar punctures are made in the interspace between L IV and L V, or at the lumbo-sacral articulation; and only the first 2 to 5 cc. of fluid are retained for total protein estimation. That a normal total protein content of the spinal fluid may be found in the presence of a ruptured intervertebral disc is indicated by a review of the reported cases, in which 20 per cent showed a total protein below 40 mg. per 100 cc. It has been our experience in two patients with ruptured discs to observe a previously recorded high total protein content fall to a normal level after simple rest in bed. The cell count of the spinal fluid specimen has been uniformly within normal limits. The Pandy reaction has been positive, as expected, in the cases with a total protein reading above 40 to 50 mg. per 100 cc. No change in the normal dynamics of the spinal fluid has been observed in this series, although the reverse Queckenstedt described by Love has not been used.

The clinical diagnosis of a ruptured intervertebral disc as the cause of low back pain and sciatica—and this diagnosis can only be a presumptive one—is based upon a history of trauma to the lumbar region with recurrent attacks of pain; with orthopedic signs of paravertebral muscle spasm, limitation of lumbar flexion and a positive straight leg raising test; with neurologic dysfunction as noted by an absent or diminished Achilles tendon reflex and sensory loss over an appropriate dermatome; and finally with an elevated total protein content in the spinal fluid. The diagnosis is confirmed and the ruptured disc exactly localized by fluoroscopy and roentgenography of the subarachnoid space after the injection of iodized oil.

A study of plain roentgenograms of the lumbo-sacral region of the spine is of little aid in the diagnosis of this lesion. The most characteristic finding is a narrowing of the intervertebral space, probably due to loss of disc substance. The scoliosis and partial obliteration of the normal lordosis may be observed in most cases. For fluoroscopic and roentgenographic contrast studies, five cc. of iodized poppyseed oil (lipiodol) are injected into the lumbar subarachnoid space. The injection may be made in any of the lumbar interspaces. A free flow of spinal fluid should be obtained to prevent the accident

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11. Fincher, E. F., and Walker, E. B.: Displacement of the Intervertebral Cartilage as a Cause of Back Pain and Sciatica, South. M. J. 31: 520 (May) 1938.

of an epidural injection, which is disastrous to the contemplated study or to any future lipiodal investigation. At least 5 cc. of the opaque substance should be used, inasmuch as the characteristic defect is quite small. We have had no experience with the use of air as a contrast media nor have we experienced over the past ten years any untoward sequelae with iodized oil. Unfavorable reactions may occur with lipiodol not especially prepared for subarachnoid injection. Clinical observations by Globus(12) failed to demonstrate neurologic sequelae in ninety patients. It is our feeling that careful choice of patients for lipiodol injections will greatly reduce unnecessary examinations and potential danger from untoward reactions.

The equipment for the examination consists of a tilting fluoroscopic table with a suitable switch, so that instantaneous roentgenograms may be made of suspicious defects noted on the fluoroscopic screen. Before the study is commenced, the patient should be allowed to sit up for at least thirty minutes, so that the lipiodol may collect as a single mass in the cul-de-sac. Since the lesion to be demonstrated is a small, anteriorly and most often laterally placed mass opposite the intervertebral space, the patient is placed face down on the tilting table, and the lipiodol as a unified mass is directed rostrally by suitable manipulation of the table. A constant filling defect is at once recorded in the anterior-posterior projection, and lateral views with each side down in turn are recorded by repeated manipulation of the contrast media. (Fig. 1.) Occasional resumption of the sitting posture for an additional thirty minutes may be necessary if the iodized oil shows a tendency to fragment into globular masses. Similar fluoroscopic study is next carried out with the patient resting on his back, in order to explore the posterior aspect of the subarachnoid space, and to rule out the possibility of a spinal cord tumor in this general location. Finally, all studies are repeated and suspicious areas re-examined twenty-four hours later; for it has been demonstrated that small defects may be more clearly demarcated at that time by the lipiodol column as it traverses the dural reflexions of the roots. (Fig 2.)

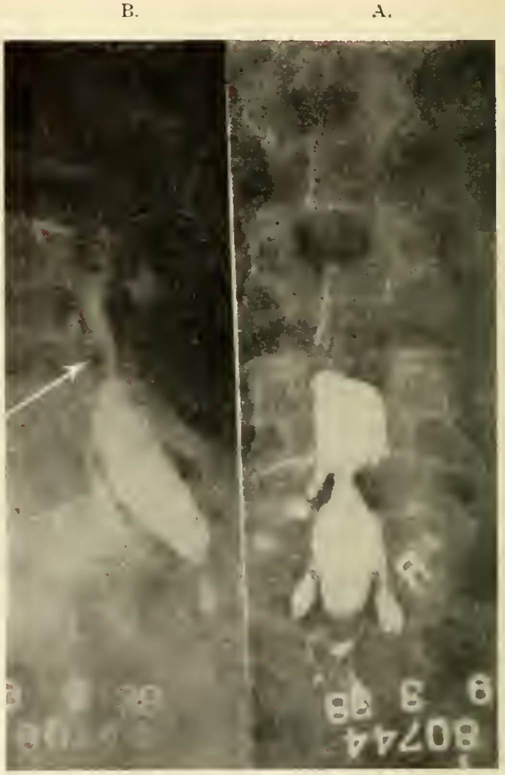

Fig. 1. (A.) Lipiodol injection localizing ruptured intervertebral disc at Lumbar IV, right—anterior-posterior projection. (B.) Lateral projection, with defect marked by arrow.

The differential diagnosis of a rupture of the intervertebral disc must consider tumor of the cauda eguina, hypertrophy of the ligamentum flavum, arachnoiditis with radiculitis of the cauda equina, and those ill-defined and poorly understood cases of "sciatica" that fulfill the requirements of the clinical picture of a ruptured disc but fail to show the characteristic defect in the lipiodol study. Two tumors of the cauda equina, three examples of hypertrophied ligamenta flava, one chronic arachnoiditis, and eight cases of obscure sciatica were encountered among the patients without typical ruptured discs. The number of patients in this group has expanded rapidly, and it furnishes a wide field for further clinical research. In our experience, the various disturbances that simulate a rupture of the intervertebral disc may be readily and accurately differentiated only by lipiodol injection.

The ruptured portion of the intervertebral

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12. Globus, J. H.: Contributions Made by Roentgenographic Evidence After the Injection of Iodized Oil, Arch. Neurol. and Psychiat. 37: 1077 (May) 1937.

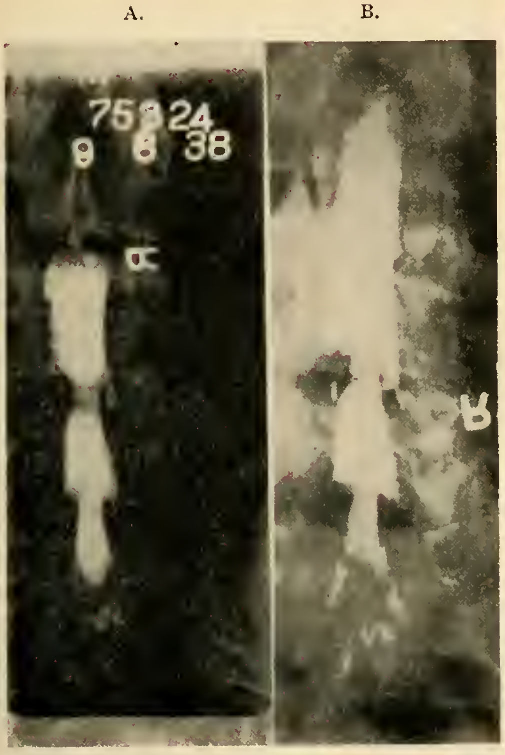

Fig. 2. (A.) Lipiodol injection localizing ruptured intervertebral disc at Lumbar IV on left side. (B.) Twenty-four hour plate illustrating more definite outline of defect and continued failure of root filling.

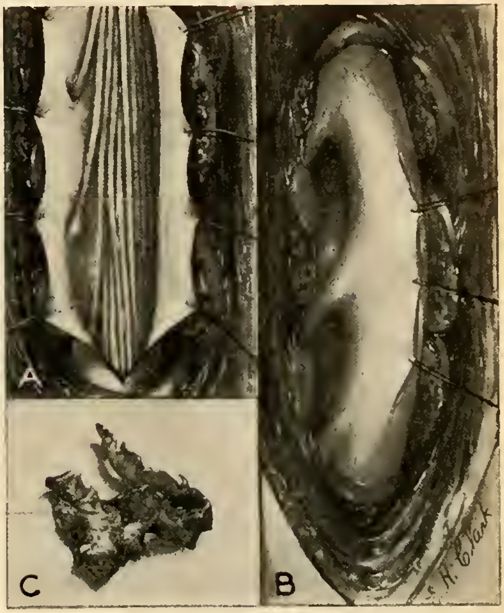

Fig. 3. (A.) Intradural appearance of edematous nerve root. (B.) Extradural approach to ruptured disc. (C.) Actual disc fragment after removal. The laminectomy is more extensive than that routinely performed.

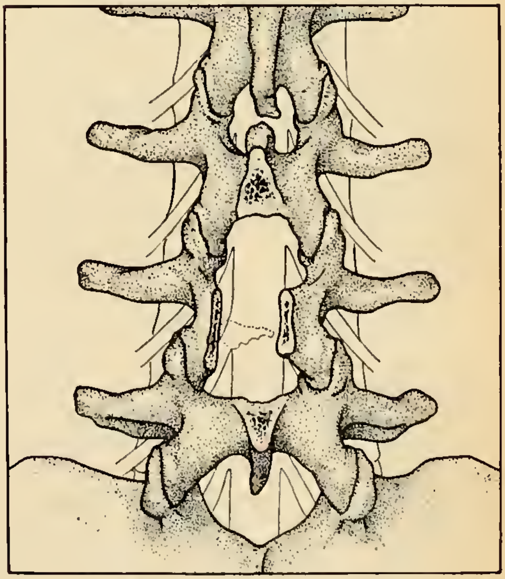

Fig. 4. Actual bony defect in simplified and usual approach to ruptured disc fragment.

disc is resected either extradurally or transdurally by a simple laminectomy. (Figs. 3 and 4.) The removal of the appropriate spinous process, the beveling of the adjacent spines, and the partial resection of a single lamina give sufficient exposure for the removal of a unilateral protrusion. A centrally located or bilateral protrusion will necessitate a wider resection of the laminal arch. All lesions are first approached transdurally in order to ascertain the location of the ruptured fragment, to inspect the involved root, to remove the previously injected lipiodol, and to allow the operator to estimate later the relief obtained after resection of the ruptured disc. In the majority of cases with laterally placed lesions, the involved root was edematous and injected and the rounded contour of the disc fragment could be visualized beneath the root as it entered its dural reflexion. In all but two cases, the disc was approached extradurally. It is not necessary to resect the articulating facets, inasmuch as the removal of the ligamentum flavum will afford adequate exposure of the protrusion.

In most cases, upon incision of the posterior longitudinal ligament, the ruptured fragment or fragments will extrude spontaneously. Occasionally, the disc tissue must be curetted out piecemeal. Hemorrhage from the anterior dural venous plexus may be annoying, but it is readily controlled by a muscle pack. With careful hemostasis, all operative wounds may be closed without drainage. In only two cases was fusion of the lumbo-sacral articulation added to the procedure described. Although edema and degenerative changes have been noted by Deutcher and Love(13) in a pathologic study of their material, such changes were not observed in the resected specimens in this series.

No postoperative complications were encountered among these patients, and there were no operative fatalities. Patients were kept supine for twelve to fourteen days, and were discharged with a lumbo-sacral belt, to be worn for three months. They were advised to return to light exercise at the end of one month, and to their usual work at the end of three months. Three of the ruptured discs were located at lumbar three, twelve at lumbar four, and ten at the lumbo-sacral articulation. All patients in this series have been completely relieved of their sciatic pain, and all but two have been relieved of the low back pain as well. No recurrence has as yet been observed, although the postoperative interval, varying from eighteen months to three months, is far too short to estimate adequately the permanency of this clinical syndrome or to evaluate its present treatment.

Abstract of Discussion

DR. W. W. VAUGHAN (Durham): The history, signs, symptoms, and physical findings have been discussed by Dr. Woodhall, and therefore this part of the discussion will be confined almost entirely to the technical aspect of the use of fluoroscopy and x-ray films in the diagnosis of herniated intervertebral discs.

Oftentimes, one may suspect such a lesion by examination of routine roentgenograms of the region involved. The most characteristic finding is narrowing of the cartilage between two vertebrae, and rarely, on extremely good films, one is able to see the posterior displacement of the longitudinal ligament of the spine. These findings are only presumptive and should be confirmed by the use of lipiodol or some contrast media.

Lipiodol should be given in the lumbar region, since the majority of these lesions occur in this anatomical location. The interspace between the first and second lumbar vertebrae is usually the elective site of the injection, and after removal of a sufficient amount of spinal fluid for laboratory studies—usually about 15 cc.—5 cc. of either 20 per cent or 40 per cent lipiodol is injected into the spinal canal. The patient is allowed to remain in the supine position for about one hour, but it is essential that at least one hour previous to the x-ray examination, the patient be kept in an upright position, either sitting or walking around.

The first part of the x-ray examination is done with the patient in an almost erect position, and a detailed study is made of the lower portion of the spinal canal. It is essential that the fluoroscopist have his eyes well accommodated, and it requires at least ten or fifteen minutes in a dark room to acquire maximum visual acuity. The patient's head is gradually lowered, and the lipiodol flo s slowly up the canal. Any questionable defects that are noted in the column of the contrast media should be recorded by roentgenograms. Sometimes it is necessary to elevate the feet to a 45 to 60 degree angle in order to promote further flowing of the lipiodol up the spinal canal. Due to the specific gravity of the opaque media, it will flow along the anterior portion of the canal, and any defect produced by a protrusion of one of the intervertebral discs will be noted. After the lipiodol has been allowed to flow up the canal as far as symptoms justify, the patient is again placed in the upright position and allowed to remain in the sitting position for about one hour. The previously described examination is repeated with the patient lying on his back. This is done to eliminate the possibility of a spinal cord tumor.

The following day, the entire examination should be repeated. This is due to the fact that there is quite a variation in the extent of protrusion of these discs from hour to hour, apparently due either to activity of the patient or to position at the time of examination. This indicates that the injured discs are quite mobile.

There is one thing I would like to mention in connection with sciatica. Every once in a while we find a patient who says he has sciatica, who may have diabetes.

I examined a patient at our hospital, and at first found only a small filling defect. At the second x-ray examination one of the largest herniated intervertebral discs I have ever seen was demonstrated. These things are extremely mobile and they are not always easy to demonstrate from the x-ray standpoint.

In brief, it may be said that they are usually unilateral, but frequently they lie in the mid line and produce filling defects. These are sharply demarcated and always lie opposite the cartilage interposed between the bodies of the vertebrae.

Differential diagnosis must be made between herniated intervertebral discs and tumors, especially with multiple meningiomas or neurofibromas. These tumors usually lie along the posterior aspect of the spinal cord, and physical examination will oftentimes aid in the differential diagnosis.

A single lesion, such as might occur from metastatic malignancy, is rarely encountered. Such a lesion, however, may be diagnosed by the plain films without lipiodol studies because of the destruction of bone in the vicinity, especially the laminal arches.

DR. D. E. ROBINSON (Burlington): I would like to ask two questions: Does Dr. Woodhall feel

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13. Deutcher, W. G., and Love, J. G.: Pathologic Aspects of Posterior Protrusions of the Intervertebral Discs, Arch. Path. 27: 201 (Feb.) 1939.

justified in using lipiodol, even though he has a total protein, say, of 10 or 15 milligrams in a suspected case?

The second question: Does he find small nodules in any condition other than these cases?

DR. BARNES WOODHALL (Durham): In answer to Dr. Robinson's question, I may say that we rarely inject lipiodol in the presence of a normal protein content. However, if the neurological findings are quite striking, in perhaps 10 per cent of the cases, lipiodol is injected even though the total protein is low or normal.

As far as nodules are concerned, they are tiny opaque disturbances in the body of the vertebra. We see them very often in normal individuals who have no complaints at all.

THE RELATIONSHIP OF GYNECOLOGY AND UROLOGY

Edgar V. Benbow, M.D.
Winston-Salem

Often we examine patients who complain of frequency of urination, and find no pathology in the urinary tract, but some other condition such as a fibroid of the lower anterior wall of the uterus or of the cervix jutting into the posterior wall of the bladder; a retroverted uterus with its cervix pointing against the bladder, thus irritating the trigone; a pathological anteflexion of the uterus with the fundus jutting into the bladder; a carcinoma of the cervix elevating and indenting the bladder; or a mass in the pouch of Douglas which presses the uterus forward into the bladder, thus elevating the trigone. This elevation of the trigone is important from a pathological standpoint. Just as important is the depression of the trigone. After nearly every delivery there is some depression of the anterior vaginal wall, which increases with the number of deliveries and with age and which gives rise to a cystocele. Trabeculae are formed in the bladder as a result of hypertrophy, and hold residual urine. Bacteria grow readily in this residual urine, giving rise to cystitis, first in the trigone and later in the remaining portion of the bladder. Pus and fibrin may form here. The fibrin may act as a foreign body and become a center for stone formation. This condition cannot be cured by medication if the cause of the pathology is left. The cystocele must be repaired if we expect a cure.

We have examined patients with symptoms of renal colic, and found no stone, but urethritis. This happens too often to be a mere coincidence.

In the normal bladder the sphincter muscle separates the bladder proper from the urethra, and may be seen as a definite prominence. It is not a continuous muscular ring like the sphincter ani, but, at the junction of the trigone and urethra its fibers pass into the muscles of the trigone on either side; so that when the sphincter contracts it elevates the trigone and presses it against the urethra. In cystocele a fallen trigone is pulling down on the sphincter of the bladder; the sphincter loses its tone and the patient becomes incontinent. Later the bladder may get so low that the patient is not incontinent, but must elevate the bladder with her fingers in order to empty it. This prolapse of the bladder also causes a pulling and stretching on the ureters, with consequent narrowing of their lumen; this in turn causes a certain amount of obstruction to the flow of urine in the ureters, leading to hydro-ureter, hydronephrosis, and pyonephrosis.

Any acute pelvic inflammatory condition may cause frequency of urination, because the bladder empties itself often in order not to become distended and cause pain by pressing on the inflamed part.

In the normal bladder the air bubble is in the midline. If it is to one side the bladder is asymmetrical, because the air bubble is always in the highest point. This asymmetry of the bladder may be seen in parametritis, pregnancy, myoma, ovarian cyst, and other conditions in which the bladder is pressed upon by a growth or inflammatory process. This may be one means of differentiating between a large ovarian cyst and abdominal ascites.

Certain changes in the urinary tract may occur in case of cancer of the anterior vaginal wall. At first the cancer may elevate or indent the bladder. At this stage the mucous membrane of the bladder is normal. The lymph vessels of the bladder are first blocked and the cancer then begins to grow into the muscle, causing indentation and edema of the bladder wall. The whole mucous membrane of the bladder is pale and edematous. Edema in the bladder indicates that the cancer has already involved the muscle of the bladder. As the cancer grows deeper into the muscle of the bladder and continues to compress the lymph vessels, the layers of the bladder wall are replaced by cancer cells

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Read before the Second General Session of the Medical Society of the State of North Carolina, Bermuda Cruise, May 13, 1939.

and there is edema only of the mucous membrane, with edematous points like a bunch of grapes or a number of cysts. This is called bullous edema. Between the spots of bullous edema is a generalized edema. Over the areas of bullous edema only the thin mucosa is free of cancer cells. The cancer continues to grow until with the cystoscope yellowish nodules can be seen, still protected by a normal tissue lining, the epithelium of the bladder. A few weeks later these cancer nodules perforate into the lumen of the bladder, the superficial layer becomes necrotic, and the patient's urine is cloudy and sometimes bloody. From the time the urine touches the cancer cells, the necrotic cells slough off from the bladder toward the vagina and the cells from the vagina slough off toward the bladder, establishing a vesicovaginal fistula.

The bladder manifestations of a *cervical* cancer are usually not in the midline, but to one side of the midline. The first elevation of the bladder is usually near one of the ureteral orifices. The cancer may grow into the muscle of the ureter and cause obstruction, with consequent uremia. The pain on one side which the patient complains of may be due to a hydronephrotic kidney or hydroureter. About 75 per cent of patients with cervical cancer die of uremia.

Cancer of the body of the uterus never causes edema of the bladder, because it usually grows into the peritoneal cavity.

Cancer of the tubes is too rare to discuss. Cancer of the ovaries may cause changes in the lateral bladder wall. We may see some indentation of the bladder wall, but not the edema or the perforation, because the easiest way for it to grow is into the abdomen. *An enlarged cancerous gland* in the parametrium, growing against the ureter and compressing it, may cause hydro-ureter and hydronephrosis. An ovarian tumor, by pressure upon the ureter, may have the same effect.

Adenomyosis, or endometriosis, is a condition in which endometrial tissue of the uterus is found in some other location of the body. It bleeds regularly at the menstrual periods. If it is located in the ovaries it leads to the formation of chocolate cysts. If it is located in the bladder wall, the patient will pass bloody urine at the menstrual period, and will have pain in the bladder, which disappears after menstruation. The pain is due to the swelling of the endometrial tissues in the bladder wall. This endometrial tissue may be observed through the cystoscope, and if some of this tissue is removed it has the same microscopic appearance as the endometrial tissues lining the uterus. Adenomyosis may originate from blood passed out through the fallopian tubes; from cells transplanted at the time of an operation where the uterus is cut into, as in caesarean section; or from misplaced fetal cells. Adenomyosis may be treated by resection of this area of the bladder, by x-ray or radium to the ovary—thus castrating the patient—or by radium needles into the bladder tumor itself. After the menopause the patient has no more trouble from endometriosis.

Ectopic pregnancy usually causes no signs in the bladder unless a large haematocele forms, causing elevation or indentation of the bladder.

Pain in the kidney region may be a referred pain from *adnexal* disease, and the adnexal disease may be overlooked unless a pelvic examination is made. Cases have been reported of pyosalpinx and abscess of the parametrium perforating into the bladder. The former will not heal without an operation and closure of the sinus tract; the latter may heal spontaneously. This is because the abscess of the tube arises in a pre-formed cavity, while that of the parametrium is not in a pre-formed cavity and will heal by granulation.

Tuberculosis of the kidney is often associated with tuberculosis of the adnexa, and the reverse is also true. If we find tuberculosis at one of these places we should look for it at the other.

There are cases on record where dermoid cysts have perforated into the bladder, emptying their contents of hair, cartilage, teeth, and sebaceous material there.

Certain changes take place in the bladder at the menopause. There is atrophy and loss of tone in the sphincter, and if the patient has had many deliveries and has a cystocele dragging down on the sphincter she is apt to lose a few drops of urine when the abdominal pressure is increased. The mucous membrane of the trigone and that surrounding the trigone becomes atrophic and more grayish in color.

In the later months of pregnancy pyelitis is more apt to develop than in the early months. Pyelitis is apt to develop in pregnancy because of the indentation of the bladder by the enlarged uterus, which impedes the flow of urine through the ureter. Also in the later months of pregnancy, the ureters take a more direct course through the bladder wall, causing their mouths to gap open. This favors a reflux of urine from the bladder back into the ureter. Probably the constipation of pregnancy also has something to do with the development of pyelitis, since colon bacilli may enter the urinary tract through the lymphatics from the intestinal tract. A retroverted and enlarged uterus may cause pyelitis in a similar manner, and the cervix pointing against the bladder may irritate the trigone.

Incontinence of urine may be due to fistulae. There may be ureteral fistulae, bladder fistulae, or urethral fistulae, opening into the vagina. A bladder fistula may be caused by the knife of the operator; by a difficult delivery, causing necrosis of the tissue; by cervical or vaginal cancer; or by pressure from a pessary. The fistulae between ureter and vagina are usually caused by cutting the ureter during an operation. This type of fistula may be complete or incomplete. In the complete type the entire output of urine from the kidney on the affected side empties into the vagina. In the incomplete type a part of the urine from the affected side empties into the bladder and part of it into the vagina. Incontinence may be absolute or incomplete. Incontinence may be due to congenital malformations, such as hypospadias and epispadias; to diseases of the central nervous system—e.g., tabes; to wounds of the spinal cord; and to injury to the sphincter muscle itself (during an operation or a delivery, or by extraction of foreign bodies from the bladder). Other acquired causes of incontinence are senility with atrophy of the sphincter, weakening diseases with asthenia of the tissues, a cystocele, or a prolapsed uterus. Incontinence may also be caused by an incarcetrated tumor of the pelvis which presses the trigone and sphincter against the urethra, giving the overflow of retention. I had such a case caused by pregnancy taking place in a retroverted uterus. As the uterus enlarged in the hollow of the sacrum it pushed the cervix against the urethra, thus obstructing it. While speaking of incontinence, I would like to tell of a little girl who had been wet since infancy. She had been to doctors numerous times, and without thorough examination had been "treated" for bed-wetting, with no results. As she grew up she was beaten on numerous occasions, but the condition continued. Finally she was taken to a doctor who gave her a thorough and careful examination. It was found that she had three kidneys and three ureters. Two of the ureters led normally into the bladder; while the third emptied into the vagina. These cases are subject to ascending infection. If the kidney is good the ureter should be transplanted into the bladder, but if the function of the kidney is gone it should be extirpated. In these cases the ureter always empties into the side of the vagina on which the kidney is located.

Kraurosis of the vulva may be caused by the irritation of sugar in the urine. About 25 per cent of cases of kraurosis are found in diabetics. Normal urine in incontinence may also cause kraurosis.

Pain in the adnexal region may be a referred pain from the bladder. I have in mind a case illustrating this. Pelvic examination revealed no definite trouble in the adnexal region. The patient was referred to a urologist who, with a cystoscope, found minute ulcerations of the bladder mucosa, which were probably due to a deficiency of vitamin B. This patient was given vitamin B and her symptoms rapidly cleared up.

A paper on this subject would not be complete without mentioning the importance of an infected cervix as a focus of infection in disease of the urinary tract. Winsbury-White(1) of London states that many cases of loin pain are alleviated when an infected cervix is dilated and cauterized. It is interesting to recall that pyelitis occurs much more frequently in females than in males, and that hydronephrosis is twice as common in women as in men. Winsbury-White also states that in 87 per cent of cases of stone of the upper urinary tract there is residual infection of the lower urinary tract or of the genitals. Infection of the genitals may give rise to a lower urinary tract infection, and this in turn cause an upper urinary tract infection with stone formation. Upper urinary tract infection does not have to come through the lumen of the ureter, but may ascend by way of lymphatics, which may arise from the genitals as well as from the lower urinary tract. Winsbury-White injected India Ink and dead tubercle bacilli

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1. Winsbury-White, in the Journal of Urology, Nov., 1936.

into the cervices of white mice, and then by studying the cross sections with the microscope traced the course of the dye from the cervix to the upper urinary tract through the lymphatics. He further states that a mildly dilated upper ureter and pelvis may result from foci in the cervix. Adhesions may form between the adjacent ureter and pelvis, and stenosis of the ureter may result from contractions, leading to hydronephrosis and even to stone formation.

Summary

Many patients present themselves with urological symptoms when their condition is a gynecological one, and vice versa. Furthermore, a urological condition may have its primary etiology in the genital tract. The reverse of this is also true. We should have this close relationship in mind in making a urological or a gynelogical examination.

Abstract of Discussion

DR. HAMILTON W. McKAY (Charlotte): I think this paper is timely in emphasizing the interrelationship between symptoms produced by the urinary tract and those of the interior genitalia.

In a female patient with urinary symptoms, frequency is probably the most common symptom. I think the most valuable procedure that can be attempted is for the doctor himself to make a thorough inspection of the female organs. For years I have insisted that in examining a female patient, adult or child, with urinary symptoms, the doctor should obtain a catheterized specimen of urine himself.

The female urethra reflects oftentimes what is taking place in the bladder and kidneys. Time and time again we see patients referred with a diagnosis of pyelitis, nephritis, and various other infectious processes of the upper urinary tract, who have been repeatedly examined by the cystoscope, when an inspection of the urethra alone reveals an infection in the deep glands of the urethra, in Skene's gland and others.

DR. DAVID J. ROSE (Goldsboro): I want to call attention to one finding upon which little stress has been put, and that is a stone in the lower ureter below the iliopectineal line. I merely call attention to that on account of a method used in the treatment of this condition in the ureter below the brim of the pelvis. These stones have been easily removed under light anesthesia, by a very simple technique outlined by Dr. Cobb's paper on vaginal ureteral lithotomy.

DR. BENBOW: I want to say one more word: I think that the importance of the cervix of the uterus as a focus of infection has been overlooked. Throat men all talk on the tonsil, and medical men speak of the teeth, the mastoid, the appendix, and the gall bladder as points of infection. Yet they do not take the cervix as a focus of infection seriously enough.

Whenever I have to do a hysterectomy I make it a rule to take the cervix out, too, if it is bad. If the cervix is all right, there is no need to take it out; but if it is bad, there is no cause to leave it in. Severe cases of arthritis and rheumatism have cleared up when an infected cervix has been removed.

PRESENT DAY DIAGNOSIS AND TREATMENT OF CHANCROIDAL INFECTION

Walter L. Thomas, M.D.
Durham

Fifty years ago, A. Ducrey(1) first described small gram negative chain bacilli in smears from ulcerative lesions on the external genitalia. For many years the exact role played by this bacillus was not completely understood. Much of the confusion was due to inability to culture the organism and to the fact that the causative agents in the so-called newer venereal ulcers and buboes, such as lymphopathia venereum, granuloma inguinale, etc., had not been discovered. In recent years, the perfection of specific skin tests and laboratory procedures has made the differential diagnosis very accurate. In a review of our patients we have been impressed with the number of patients with multiple venereal infections—e. g., syphilis and chancroid, lymphopathia venereum and syphilis. This is natural because of promiscuous sexual contacts. Every illicit sexual exposure is a potential source of infection with H. ducreyi, Treponema pallida, Neisseria gonorrheae, inclusion bodies of Donovan or the virus of lymphopathia venereum.

The recognition of chancroidal infection in the male based on clinical grounds is comparatively easy. No clinician, by simple observation of an ulcerative or bubonic lesion in the female, can accurately ascribe the lesion to a particular disease process. In other words, a chancroidal lesion may simulate the lesion of syphilis, of granuloma inguinale, of lymphopathia venereum, of a furuncle, of a fuso-spirochaetal ulcer, of tuberculosis, of carcinoma or of fungus infection. We must depend upon our dark field examination, smears, cultures, skin tests and biopsies to give correct diagnosis.

A chancroid or soft chancre of the vulva usually affects the greater or lesser lips. The vaginal fornix, and even the cervix, may be affected. Within 12 to 24 hours after infection, there appears a small reddish macule at some abrasion of the skin or mucosa. This

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From the Department of Obstetrics and Gynecology, Duke University Hospital. Read before the Section on Gynecology and Obstetrics, Medical Society of the State of North Carolina, Bermuda Meeting, May 10, 1939.

(1.) Ducrey, A., in Congres Internat. de Dermatol. et Syphilogr., Paris, 1889, p. 229.

early lesion is often not noticed by the female and she may date her coitus a week or more before. The early lesion is generally followed by an inflammatory papule, which is converted into a pustule in the course of from 24 to 48 hours. In a very short time the epithelial covering of the involved area is lost, the pustule ruptures, and a small ulcer is noted. This ulcer has sharp, punched-out margins, a rough, grayish base, sometimes necrotic, surrounded by a red inflammatory zone, and at times shows induration. Involvement of the inguinal lymph nodes may be present, and not infrequently a chancroidal bubo will suppurate and ulcerate.

Diagnosis: The failure to diagnose a chancroidal ulcer may be of no great consequence to the ultimate welfare of the individual. Most chancroids heal spontaneously in due time. On the other hand, to confuse a chancre or early epithelioma with a chancroid would be very serious; therefore, it is more important to examine a suspected chancroid patient for simultaneous primary syphilis, carcinoma, or lymphopathia venereum than for the chancroidal infection alone.

The positive diagnosis of a chancroidal ulcer or bubo is made by finding the streptobacillus of Ducrey in a smear or culture from the lesion, and by a specific skin test. The superiority of the chancroidal intracutaneous test with bacillary antigen over the test with antigen prepared from the pus has been proven by Cole-Levin(2) and Greenblatt-Sanderson(3). The method for the preparation of the bacillary antigen from cultures which we have used and found very satisfactory has been described by Greenblatt and Sanderson(4) as follows: "To tubes of beef infusion agar in slants is added 1 cc. of defibrinated human blood. The blood is inoculated with O.1 cc. from an actively growing culture and placed under partial oxygen tension. To obtain this environment, the cotton plug is cut off short and pushed slightly into the tube; the upper portion of the tube is heated, but not too much, in a Bunsen flame, and the tube is sealed by inserting a tightly fitting rubber stopper. The culture is incubated for from two to three days at 37° C. During this period good growth takes place in the fluid blood, and a lesser growth appears on the surface of the slant. After the incubation, the blood as well as the surface growth, if any, is removed with a sterile pipet and added to approximately 25 cc. of sterile distilled water in a sterile centrifuge tube of sufficient volume, and the contents are sedimented by high speed centrifugation. The supernatant fluid is removed aseptically and discarded, and the process is repeated. Two such treatments suffice to remove most of the hemoglobin. The sediment of bacilli and red cell debris is suspended in sterile physiologic solution of sodium chloride, 10 cc. per slant being placed in sterile vials, and heated for thirty minutes at 60° C. A 1:10,000 solution of merthiolate is used as a preservative."

The test is performed by injecting O.1 cc. of the vaccine intracutaneously. The reaction is read in twenty-four and in forty-eight hours. In a negative test, either no reaction is seen (after two days) or at most a slight erythema, or minimal papule, which disappears quickly. In positive tests, red inflammatory papules or indurations approximately 1 to 2 cms. in diameter are seen, sometimes with erythematous areas or central pustules. In the interpretation of the results of this test, a number of points should be considered. *Negative* results rule out chancroidal disease unless the ulcer is in a very early stage, less than eight to ten days old. *A positive result,* according to Greenblatt and Sanderson(3) "*commits* one to the diagnosis of chancroidal infection only when the Frei test, the Wassermann test, and the histopathological examination for malignant disease and for granuloma inguinale give negative results"—i. e., a positive chancroid test is only presumptive evidence. When the reactions are interpreted, one must keep in mind that the skin tests for chancroid and lymphopathia venereum remain positive for life.

Treatment: The most effective prophylaxis against chancroid or any venereal infection is abstinence from promiscuous sexual contact. The technique of chemical prophylaxis for chancroidal infection is simple and effective if it is applied within

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(2.) Cole, H. N. and Levin, E. A., in J.A.M.A., 105: 2040, 1935.

(3.) Greenblatt, R. B. and Sanderson, E. S., in Arch. Dermat. and Syph., 36: 486, 1937.

(4.) Greenblatt, R. B. and Sanderson, E. S., in Am. J. Clin. Path., 7: 193, 1937.

one hour after exposure. It is still of some value as late as eight hours after exposure. The female's genitals and adjacent parts should be thoroughly washed with soap and water; a douche of one-half gallon of soapy water, temperature 100° F. should cleanse the vagina and cervix. Soap and water will destroy the strepto-bacillus of Ducrey. The mechanical prophylaxis of the condom is the main hope of prevention of chancroid and other venereal infections.

Chancroidal ulcers have been treated locally with a great variety of drugs. Among the numerous preparations used are formalin, argyrol crystals, nitric acid, copper sulphate, calomel and others. Cleanliness plays a main role.

The culture vaccine of Ducrey bacilli has been used therapeutically to a very large extent. The French employed a vaccine known as "Dmelcos",(5) which was very popular. The great disadvantage of this method is that it produces very strong general reactions, a high fever, vomiting, chills and great exhaustion. In fact, many thought that the beneficial results of the vaccine were due to the fever and reaction.

Sulfanilamide therapy with spectacular results is replacing the many prolonged and none-too-satisfactory types of treatment. Kornblith, etc.,(6) reported a series of 45 patients treated with oral sulfanilamide. There was, without exception, complete healing at the end of two weeks, with no ill effects due to the treatment. Batchelor and Lees(7) treated 10 cases of chancroid with sulfanilamide by mouth. Four patients represented relapses after treatment with "Dmelcos" vaccine. The average number of days for cure was nine. There was one patient who developed toxic symptoms from the drug. Every chancroidal patient that we have seen during the past year has been placed on this therapy. We are convinced that this drug by mouth will cause complete healing with eradication of the disease within one to two weeks. The economic value of this treatment is of great importance. The treatment is easily carried out and is ambulatory. We have no definite plan of dosage. As a rule we have employed about 80 grains in four divided doses daily for the first three to four days, and then 40 grains daily for the next nine to ten days. No patient has yet failed to heal promptly under this therapy. Local treatment of the ulcer or bubo has not been necessary. We feel that the sulfanilamide should be continued until the process is completely healed. The carefully controlled supervision of sulfanilamide by a physician is absolutely necessary. The side reactions which may indicate toxicity to the drug should be closely followed. One death from sulfanilamide chemotherapy would be tragic as chancroidal infection *per se* carries no mortality. Weakness, dizziness, loss of sleep, "drunk feeling" and slight dyspnea are so common as to be called concomitant reactions rather than complications. Fever-rash syndrome, severe cyanosis, low hemoglobin content, leukopenia, severe vomiting and gastro-intestinal disturbances should indicate immediate discontinuance of the drug. The mode of action of sulfanilamide on the strepto-bacillus of Ducrey has not been determined.

Summary

1. A very accurate diagnosis of chancroidal infection can be made today by culture and smear of the strepto-bacillus of Ducrey and by the intracutaneous test with the bacillary antigen.
2. More serious venereal infections such as lymphopathia venereum, granuloma inguinale and syphilis must be ruled out in every suspected chancroid patient. Early epithelioma is also to be differentiated.
3. Oral sulfanilamide causes complete rapid healing within seven to fourteen days.
4. The carefully controlled supervision of sulfanilamide administration by a physician is urged. The full cooperation of the patient is essential.

Abstract of Discussion

DR. T. L. LEE (Kinston): Dr. Thomas has left very little to be said on the subject of chancroida infections in and around the vulva. There is on thing I would like to emphasize—that is, the difficulty in differential diagnosis. We are not all s fortunate as he in having the laboratory facilitie to make an accurate diagnosis. The vaccines hav to be fresh.

At one time, years ago, there was a questio whether a lesion was syphilis. We were satisfie to find a spirochete or note its absence. Today w go beyond that. We have to make a much mor correct and accurate diagnosis exactly along th lines Dr. Thomas demonstrated.

(5.) Nicolle, C. and Durand, P., in Presse med., p. 1033, 1924.

(6.) Kornblith, Borris, A.; Jacoby, Adolph; and Wishengrad, Michael, in J.A.M.A., 111: 523, 1938.

(7.) Batchelor, R. O. L., and Lees, R., in Brit. Med. Jour., 1: 1100, 1938.

The ROLE OF PECTIN IN DIARRHEA

G. W. Kutscher, Jr., M.D.
Asheville

Before liver was found to be a valuable adjunct in the treatment of pernicious anemia, it was simply another form of meat. Recall what scientific study and publicity have done for liver. Something similar may result from the research that is now being applied to pectin. A few years ago pectin was popularly known only as a substance used by our wives to make jelly congeal. Today it has been so glorified that it is being used as a germicide, as an antihemorrhagic, as a stimulant to wound healing, in pharmacy, and even by bakers to retain moisture in bread and cake. It is used to make cheese smoother and to temper steel; the ice cream maker even finds it valuable in his industry. However, as pediatricians we are chiefly concerned with its use in the treatment of diarrhea.

A little over a hundred years ago a French physician suggested pectin as an antidote for heavy metal poisoning, since pectin formed an insoluble compound in the presence of these metals. The modern conception of pectin began when Ehrlich started to work with it in 1915. About the same time Heiser discovered the value of the raw apple diet in diarrhea. He attributed the good results to the acid content of the fruit. Moro followed a few years later, but he attributed the effects obtained to the tannin content of the apples. Malyoth in 1934 was the first to ascribe the results of apple diet to the pectin content. Much of a theoretical nature has been written on the subject by many writers since then, but very little proof has been offered to support their conjectures. The issue has recently been cleared, however, by Manville and his co-workers, who have demonstrated that pectin is the active constituent of the apple diet and that the uronic acids, namely galacturonic and glucuronic, are the essential therapeutic fractions of pectin.

For more than fifty years it has been recognized that glucuronic acid possessed a detoxifying action in the human intestinal tract. Ehrlich in his original work discovered that the chief organic acid in pectin is galacturonic acid. Today we realize that galacturonic and glucuronic acid have many similar properties. Both uronic acids form conjugation products with toxins and assist in the elimination of the poisons from the body. Possibly other fractions may have a value in the treatment of diarrhea, but at present the two uronic acids seem to be chiefly responsible for the remedial action of pectin.

The irritants in the intestinal tract are responsible for the increased peristalsis—thus the frequency of the stools in diarrhea. Pectin removes these irritants and restores normal peristalsis quickly. Pectin not only removes the irritants, but also combines with both the bacteria and the toxin, making them inert.

Corcoran has demonstrated that pectin has a germicidal action at a pH of 5.0 to 5.5, and that this germicidal action is greatly reduced when the pH reaches 6.0 or 6.5. Manville agrees that pectin can create a pH in the intestines in which ordinary pathogenic organisms cannot survive. This germicidal action of pectin has not been greatly emphasized in the literature.

Practically every writer on the subject has remarked on the fact that pectin seems to have the property of quickly converting a liquid stool into a formed stool. Its value in retaining body fluids has been carefully demonstrated by several workers. Dehydration is thus frequently avoided. Pectin contains a substance which assists the mucous membranes of the intestinal tract to secrete mucus. The mucous coating prevents mechanical injury to these mebranes.

While there are many additional advantages attributed to pectin, only the above are mentioned, because they alone have been proven. Summarizing what has been offered: Pectin is a beneficial agent in the treatment of diarrhea because of its combining action with both the causative organism and its toxin. It reduces peristalsis by removing the irritants present in the intestinal canal. Pectin has been demonstrated to have a bactericidal action. Bulky stools quickly follow its use, thus preventing great fluid and mineral loss.

My own experience with the pectin treatment of diarrhea began two summers ago. In 1937 I was so favorably impressed with its value in severe diarrheas that I used it

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Read before the Section on Pediatrics, Medical Society of the State of North Carolina, Bermuda Meeting, May 10, 1930.

in a series of 50 consecutive cases of diarrhea during the summer of 1938. A more complete analysis of that study will be reviewed elsewhere. However, I offer for your consideration and discussion a few of the pertinent observations obtained from that study.

The pectin used was in the form of a powder because I feel that it has definite advantages in this form over raw apple* The average age of these 50 children was 23.6 months, the youngest being one month old and the oldest 12 years old. A daily stool culture was made in each case by a competent bacteriologist. In this way both a clinical and a bacteriological diagnosis was made in each case. Time will not permit a detailed analysis of this study; so a rather brief summary will be presented to give you some idea of the results obtained.

Bacteriologically, such organisms as these were recovered from the stools and were believed to be the causative agency in the diarrhea: Bargen diplococcus, Escherichia Coli Communis and Communior, Salmonella Enteritides and Schottmulleri, Shigella Paradysenteriae (including Hiss, Shiga, Y, and Flexner bacillus), Aertryche and Sonne dysentery bacillus. It was one of the purposes of this study to endeavor to find a pathogenic organism causing diarrhea which could not be subdued by the use of pectin. No such organism was discovered. A final check on all stools was made to determine whether or not the previously found pathogenic organism persisted or recurred. These check-up studies revealed a complete clearance of the organism from the stools.

Clinically, from the history taken when the patient was first seen, there was an average of nine stools per day on the day preceding the time I first saw the child. One child was having forty bloody stools per day. The first twenty-four hours following the institution of the pectin treatment the number decreased to an average of four stools per day. Gross blood was present in the stool in seventeen instances but it disappeared (on the average) in forty-eight hours. Excoriated buttocks healed within thirty-six hours. The temperature dropped to normal in most instances within thirty-six to forty-eight hours, the only exceptions being the dysentery cases. The rapid disappearance of the toxicity was remarkable. Dehydration required no treatment except in those cases seen late in the disease. One child ill for twenty-four days before pectin was started was clinically well of her diarrhea in forty-eight hours. Pectin treatment seems to work about as well in the late cases as in those cases seen at the onset of the diarrhea. Naturally, late, in this instance, does not mean moribund. The first normal appearing stool was seen (average of all cases) within 2.4 days following the institution of the pectin treatment. One very interesting feature was the sudden cessation of the diarrhea within a few hours after the treatment was started. The diarrhea seemed to be checked even before the preparation had had an opportunity to pass through the gastro-intestinal tract.

In my practice I believe I have tried all the recognized forms of treatment for diarrhea and even some that have not been recognized. However, I have never seen such quick and satisfactory results as I have with pectin. Until something better is presented, pectin treatment will be my choice for all forms of childhood diarrhea.

Mass Killing.—Devoting our lives, as we are, to the saving, the conservation of human life, it is inescapable that our first reaction to mass killing is one of frustration, of futility. How puny are our efforts compared with the effect of war. Four years of the World War nullified, wiped out, the results of probably forty years of medical progress. The lifetime of a hundred laboratories, a thousand scientists, tens, yes, hundreds of thousands of doctors and nurses gone for naught.—Parran, Thomas Jr.: Cancer and the Public Health, Science 90: 2341 (Nov. 10) 1939.

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The Costs of War.—Not counting other losses, if the material costs of the World War and the armament costs since then could have been spent to satisfy the basic needs of the people for peaceful living, the world today would be experiencing a standard of living beyond anything ever dreamed of. To attain a higher standard of national health is an urgent need in this country—whether the future brings us continued peace or war.—Parran, Thomas, Jr.: Cancer and the Public Health, Science 90: 2341 (Nov. 10) 1939.

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*This product is now on the market, made by Mead Johnson and Co., known as Pectin Agar with Dextri-Maltose.

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February, 1940

"THE SCARCITY OF DOCTORS"

The *New York Times* for December 30 records an interview with Dr. Hugh S. Cummings, former Surgeon General of the United States, immediately after his return from meetings of the Health Committee of the League of Nations in Geneva. "Dr. Cummings said that the meetings had been held to coordinate efforts in checking the spread of disease as a result of malnutrition and epidemics arising out of the war . . . 'There never have been enough doctors in most of the European countries,' he said. 'And those that were available are now mobilized. So there is going to be a great problem created by the scarcity of doctors.' "

In the *Reader's Digest* for December—pages 19 to 25—is an article, "Health under Hitler", by Dr. Martin Gumpert, "formerly head of Berlin City Dispensary for Deformity Diseases". In this article Dr. Gumpert states that in Germany "Scarlet fever cases in 1933 were 79,830; in 1937, 117,544. In 1938 there were 77,340 cases of dipththeria; in 1937, 146,733 . . . In Germany rickets shows an appalling increase; in Munich only 3.5 per cent of the school children are free from its symptoms . . . Dysentery . . . has increased 300 per cent under Hitler . . . The German death rate has increased for nearly every age group, but particularly for the levels of one to 15 years and 20 to 45".

"What is being done to stop the decay in the health of the German people? Is the education of the rising generation of doctors being improved?

"On the contrary. Two laws passed in 1939 are significant. One cut down the period of medical study by two years. The other legalized the activities of quacks and nature healers: 'Those who feel within themselves a special call to nature healing can dispense with higher education or any form of examination.' For every four certified doctors in Germany there is one so-called nature healer."

These two views—one, that of a veteran American public health worker, the other of a German physician—should give pause to those who would prescribe liberal doses of European political medicine as the tonic needed to improve the health of the American people, even though, according to the Associated Press on January 6, "Surgeon General Thomas Parran . . . today described the American people as the healthiest people in the world, and the present generation as the healthiest in the nation's history." If the political medicine practiced in Europe—which had its beginning in Russia and Germany—offers such tremendous advantages both to the public and to the physicians, why should there be such a scarcity of doctors reaping its benefits? And why, after half a century of this medical Utopia, reaching its climax under the present Nazi regime, should the health of the German people retrograde so rapidly?

Doubtless many Europeans who, in the beginning, favored a system of political medicine would now like to see it abolished; but it is too late. Let the people of America take warning from their pathetic example. It will be agreed that there are many other factors than socialized medicine to explain health conditions in Germany and other European countries; but the stubborn fact remains that the socialization of medicine was the entering wedge for totalitarianism in Germany and in Russia.

A MODERN CLASSIC

DOCTOR AND PATIENT, by the late Francis W. Peabody, is a slim volume of only 95 pages, published by The Macmillan Company. It is worth far more than the $1.50 asked for it.

This little work belongs in Sir Francis Bacon's select group of books which deserve to be chewed and digested. It contains only four essays, but they reveal the soul of a great physician and a great humanitarian. The titles are: "The Public and the General Practitioner", "The Care of the Patient", "The Physician and the Laboratory", and "The Soul of the Clinic". The author's theme is well expressed in the subhead on the title page: "Papers on the Relationship of the Physician to Men and Institutions".

The first paper is devoted to proving the statement: "Never was the sound general practitioner more important than he is today." Here is no fulsome eulogy of the old horse and buggy doctor, but a logical analysis of the need for men trained to see the body and the mind as a whole. The value of specialists is recognized, but the need for the wise clinician is stressed.

The second paper deals with the importance of the doctor-patient relationship, pleads for individualism in the practice of medicine, and tells how to win and to keep the patient's confidence. In the third paper, due tribute is paid the laboratory, but the point is emphasized that even now the number of tested and reliable laboratory procedures is relatively small, and that a thorough knowledge of a few methods is worth more to the clinician than a superficial acquaintance with many.

The final essay is a letter to Dr. Longcope, of Johns Hopkins, in which Dr. Peabody sets forth his conception of the relationship and responsibility of the Medical Chief to his Clinic. Only a real doctor and a true lover of humanity could have written it. No doctor could read it without wanting to do better work; no teacher, without taking a greater interest in his pupils; no medical chief, without a more kindly feeling toward his patients and his interns.

The first three papers should be required reading for third and fourth year medical students, interns, residents, and, so far as possible, practitioners. The fourth should be read at least once a year by every medical teacher and every attending physician in the country. The four together, if they could be assimilated into the professional souls of all the doctors in the country, would so raise the standards of practice as to put an end to all threats of political medicine.

Reading this little classic is made poignant by knowing that its author died of cancer the day after finishing "The Soul of the Clinic". After one has read these four essays, it is easy to agree with Dr. Hans Zinsser's appraisal of their gifted author, in the foreword: "It is a rare blending of learning and humanity, incisiveness of intellect and sensitiveness of the spirit, which occasionally come together in an individual who chooses the calling of Medicine; and then we have the great physician."

* * * *

SPOOL COTTON AS A SUTURE MATERIAL

In the *Journal of the American Medical Association* for December 16, (pages 2230-1), Drs. William H. Meade and Alton Ochsner, of New Orleans, strongly recommend ordinary spool cotton as a suture material. They have found that it has a number of advantages, other than the cost, over silk, linen, and catgut: It is less irritating to tissues; its tensile strength after implantation shows no decrease until the tenth day or later, whereas other suture materials rapidly weaken; it gains rather than loses strength in boiling; and its knot holds better.

Drs. Meade and Ochsner use No. 60 plain cotton to ligate small vessels, No. 30 for approximating the peritoneum and fascia, No. 20 for retention sutures, and No. 10 mercerized crochet cotton for through and through sutures of the abdominal wall. "Skin closure, when tension is not a factor, can be readily acomplished with No. 50 black mercerized thread. Black is used instead of white because the latter is somewhat difficult to find at times, owing to its becoming stained with blood."

While even the universal use of spool cotton by surgeons would not reduce the surplus cotton crop stored in southern warehouses as would the hypothetical extra inch on every Chinaman's shirt tail, it would seem to be almost an ideal suture material. Certainly it merits a trial.

A MESSAGE TO THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA FROM THE AUXILIARY THROUGH ITS PRESIDENT

May I congratulate the Medical Society upon its establishment of a State Medical Journal! A finer, more progressive group of doctors cannot be found than those here in North Carolina, and as an auxiliary we are proud that these outstanding men will have a channel for exchanging ideas that will work for their enrichment and, thereby for the benefit of the people.

The JOURNAL is most fortunate in its capable editorial staff. The Auxiliary is anxious to uphold this Editorial Board and cooperate with them in every way possible.

May I here express the gratitude of the Auxiliary to the Medical Society of the State of North Carolina, for printing the 1939-1940 records of the Auxiliary, and also express our appreciation for space set aside each month in this Journal for our use.

We do want to justify our existence and your faith in us. We feel that we have your local support for many reasons, but especially because:

1. It was a doctor who asked for this auxiliary and was responsible for its birth in 1923—Dr. John Wesley Long.
2. The immediate past president, Dr. J. Buren Sidbury, in his message to the auxiliary from the Medical Society, complimented the auxiliary on its educational and legislative work during his administration and commended to us a definite piece of work.
3. Dr. Olin West of the American Medical Association, through Dr. Webb Griffith of Asheville, has asked us as an organization to tell the public in every possible way that should the Wagner Bill or its substitute become law, it would not be to the best interest of the doctor or the public.
4. And finally, one doctor this year is especially anxious that an auxiliary be formed in his county while he is president of the County Medical Society.

There is one thing the Auxiliary does want the Medical Society to know. Because we as an auxiliary are anxious to be helpful to the Medical Society as well as to become better doctors' wives for having been Auxiliary members, our activities are always guided by the Advisory Board which the Medical Society elects. The Auxiliary never sponsors or undertakes a main project without first getting the approval of this Advisory Board. Our Auxiliary By-Laws require this guidance from the Medical Society as shown in Article II, Section 1:

"*Objects.*—The objects of this organization shall be to interpret the aims of the medical profession to other organizations interested in the promotion of health education; to assist in the entertainment at the meetings of the Medical Society of the State of North Carolina; to promote friendliness among the families of the medical profession; and to do such work as may be approved from time to time by the Advisory Committee appointed by the Medical Society of the State of North Carolina."

Again we thank the State Medical Society for its generous and loyal support of the Auxiliary.

(Signed) ANNA L. STROSNIDER.

* * * *

THE WOMAN'S AUXILIARY

For Mrs. Strosnider's gracious message to the Medical Society of the State of North Carolina, the NORTH CAROLINA MEDICAL JOURNAL, as the official representative of the Society, makes its best bow. We doctors appreciate more than the English language will allow us to say, the loyalty and cooperation of the Woman's Auxiliary. This organization of doctors' wives long ago justified its existence, and richly deserves the space allotted to it in each month's issue of this journal. Indeed, the NORTH CAROLINA MEDICAL JOURNAL belongs to the Woman's Auxiliary as well as to the Medical Society of the State of North Carolina; for the Auxiliary is an integral part of the Society.

Only too seldom are compliments exchanged between husbands and wives. Mrs. Strosnider has set the example; let us resolve that in the future we will show more appreciation of our wives—both as individuals and as the organization known as the Woman's Auxiliary. Dr. Rock Sleyster, in an address to the Milwaukee Woman's Auxiliary, has well said that "Nothing is as important in shaping the doctor's career as is his wife and his home. The doctor's wife must share his idealism, appreciate a standard of values held by no other group, and give to him an understanding required of few. Being a doctor's wife is both an art and a career."

CASE REPORTS

TULAREMIA

Report of a Case of the Oculo-Glandular Type

B. W. Fassett, M.D.
Durham

Tularemia is primarily a fatal bacteremia of wild rodents; secondarily, a disease of human beings. In nature, it has thus far been found in ground squirrels, wild rabbits, rats and mice. It is transmitted to man by the bite of an intermediate host such as the horse fly, wood tick, bed bug, or flea. It may also be transmitted by the bite of a contaminated animal, through self inoculation, or through contamination of the hands or conjunctival sac with parts of the internal organs or body fluids of an infected animal. Therefore, it is more commonly found in persons handling these animals—such as farmers, market men and women, cooks, hunters and laboratory workers. There is no record of the transmission of the disease directly from man to man.

The incubation period varies from one to ten days, with an average of three and a half days. The onset is sudden, and usually consists of headache, chills and fever, aching, body pains, and sweating. In some cases nausea, vomiting, abdominal cramps and diarrhea may be present. There is enlargement and tenderness of the regional lymph glands. The disease runs a rather prolonged course of two to eight weeks with remissions of temperature, recurring chills and sweats, loss of weight, weakness, and even prostration. Convalescence is slow, and there is great weakness on exertion; recovery may take place in one to twelve months. Relapses of fever after eight to ten months, lasting from six to eight days, have been reported. One attack, however, confers immunity.

The oculo-glandular type presents multiple, small discrete ulcers of the palpebral conjunctiva with yellow, necrotic plugs and indurated margins. There is marked chemosis and swelling of the lids with a mucoid discharge. In rare cases the bulbar conjunctiva is involved; single ulcers four or five mm. in diameter have been seen on the bulbar conjunctiva. Corneal complications are rare. The regional lymph glands are swollen and tender. White cells are moderately increased, but the blood count is of no diagnostic importance.

The diagnosis is made from the agglutination of the B. Tularense by the patient's blood serum. This reaction is absent during the first week, but appears during the second.

Prevention is of major importance; after the disease is once established the treatment is purely symptomatic. At the present time a specific serum is being used with considerable success.

Report of Case

The case I wish to report is that of a colored boy, ten years of age, from the northern part of Person County, who was admitted to Lincoln Hospital, Durham, N. C., on June 27, 1936.

The history of the case, taken by the intern, is as follows: In the middle of June a wild rabbit was killed near the home. The animal was skinned near the house and the hide was left on the ground for several days. About five days later the boy's eyes became red, painful, and running. An epidemic of pink eye was present in the neighborhood, and the condition was attributed to that. Eye drops were obtained from a druggist, but the condition of the eyes showed no improvement.

About a week later, another rabbit was caught and skinned by the boy's father. The dressed rabbit was given to the boy to carry into the house. Next day the child complained of soreness about the ears. Both sides of the neck became swollen and the eyes so swollen that the child was unable to open them. The family physician was called and hospitalization was advised.

The patient gave a history of having had the usual childhood diseases—measles, whooping cough and chicken pox. His health was always good except for frequent colds with sore throat and tonsilitis. Family history was negative.

I saw the patient the second day after he was admitted to the hospital. The temperature was 103, pulse 120, respirations 25. Urinalysis was negative, Wasserman plus one. A smear from the eye showed numerous pus cells. One smear showed staphylococcus. Examination of the blood showed red cells 4,650,000, white cells 13,150, hemaglobin 80. Blood cultures were persistently negative. An agglutination test for tularemia was negative on the twelfth day, but positive on the fourteenth day.

The appearance of the face and neck was that of combined gonorrheal ophthalmia and mumps. The eyes were closed by the intense swelling, and the lower lid was bathed in muco-pus. The glands of the neck were greatly swollen and tender. The everted lid revealed the typical picture of tularemia conjunctivitis. On each tarsal cartilage of the upper lid were ten openings that had the appearance of having been made with the corneal trephine, and each opening was filled with necrotic tissue. On the conjunctiva of each lower lid there were three of these ulcers, but they did not have the clear cut edge of those appearing on the upper lid. The resemblance to the appearance of the tonsils in follicular tonsilitis was very striking. At no time was there any corneal involvement.

As previously stated, the patient's temperature on admission was 103, and for the first six days it remained at about this point, with very little variation. On the seventh and eighth day there was a distinct remission, the temperature reaching normal. On the ninth day there was recurrence of the fever, which then reached the highest point during the sickness. For the next few days the temperature was of the septic type, but there was no suppuration of the enlarged glands. There followed a gradual improvement in the patient, and he was discharged at the end of the third week with normal pulse and temperature; swelling of the glands was nearly gone, and the conjunctival lesions were healed.

The general treatment was symptomatic and supportive. The eyes did best with instillation of argyrol every three hours, followed by boric acid wash.

Comment

This boy probably had an ordinary pink eye in the beginning, and by rubbing the eyes after handling the dressed rabbit, he got a direct tularemia infection of the conjunctiva. If the father was correct in the dates, the incubation period was only one day, which is frequently the case in severe infections. If he had received the infection when the first rabbit was killed, there would have been a positive agglutination the first week he was in the hospital.

The interesting points in the case were the suddenness and severity of the infection, the greatly enlarged glands, the typical punched out lesions of the conjunctiva, high temperature with prostration, and the remission with return of temperature.

Read before the Section on Opthalmology and Otolaryngology at the Bermuda Meeting of the Medical Society of the State of North Carolina, May 18, 1939.

In the community from which this boy came a number of cases of tularemia have been reported in the last two years. One terminated fatally.

Abstract of Discussion

DR. J. R. McCRACKEN (Waynesville): Do the eyes usually become affected in general tularemia?

DR. FASSETT: Not necessarily.

DR. J. D. FREEMAN (Moffitt): Have you had cases from the use of dyes on the eyelid?

DR. FASSETT: I have never seen anything similar to ciliary conjunctivitis.

DR. PEELER: Did you say how many cases of that had been reported?

DR. FASSETT: I do not know how many have been reported. This is the only one I have had. There have been a number reported in this country. There are quite a number in the literature.

CHAIRMAN PEERY: Those ulcers do not have to be typically round and punched out.

DR. FASSETT: They were irregular on the lower lid; pointedly regular on the upper.

CHAIRMAN PEERY: There is some diversity in the shape of the lesions. Some of them are rather irregular. Later in the disease they slough out, and are not so regular in their shape and size. I remember I had one case that looked as if the whole lower lid was going to slough all the way through—a late case when it was seen. I think most of the cases I have heard reported stressed that fact. Any unusual ulceration in the conjunctiva and the history is sufficient to make the diagnosis fairly certain, is it not? The blood reaction cinches the diagnosis.

DR. FASSETT: That makes the diagnosis almost certain.

DR. FREEMAN: You didn't use anything but argyrol and boric acid solution?

DR. FASSETT: We tried several different things, but the eyes seemed to do better on using ten per cent argyrol.

A NOTE ON NEURALGIAS OF CRANIAL NERVES

Frederic M. Hanes, M.D.
Durham

Tic douloureux, or trigeminal neuralgia, is by far the commonest of the painful, paroxysmal cranial nerve neuralgias; but tic douloureux due to disease of the geniculate ganglion of the seventh nerve, causing geniculate neuralgia, and lesions of the petrous ganglion of the glossopharyngeal, or ninth nerve, producing glossopharyngeal neuralgia, are seen occasionally.

Geniculate neuralgia is a frequent accompaniment of the common form of facial paralysis, or Bell's Palsy, causing pain behind the ear which may become severe, spreading to the front of the ear and down the neck. Geniculate herpes zoster, with vesiculation and great pain within the ear and concha is seen now and then, either alone or accompanying Bell's Palsy.

Glossopharyngeal neuralgia, though rare, produces such a characteristic syndrome, and is susceptible to such brilliantly successful treatment, that it should be familiar to all. There follows a brief history of such a case: A married woman of 39 came in February 1935 complaining of frequent attacks of sharp, stabbing pain in the left side of the throat and left ear.

Nothing in her family or past histories shed any light on the present illness.

During the past three winters, beginning in January, she has suffered from attacks of "sharp, quick pain", beginning in the left tonsillar region and passing upward to the left ear. The pain in the ear is of only a few seconds duration but while it lasts the ear "feels as though it would burst". "It is a glimmering, sickening pain deep down in the center of the ear." The pain always comes in sharp attacks, sometimes one, again several in quick succession. She does not have these attacks in summer, only in the cold winter months. Drinking cold water will "trigger" an attack and, recently, swallowing anything precipitates a seizure. She states that frequently thirty minutes or more are required to eat a simple breakfast. Fear of the attacks has causer her to limit greatly her food intake.

Two wisdom teeth were removed 18 months ago, in the hope of relieving the paroxysmal seizures, and 13 months ago the tonsils were removed. No relief whatsoever was experienced following these operations. Recently the attacks have been more severe than ever. She has never had otitis media or ear-aches of the usual variety.

Physical examination revealed absolutely nothing which might be incriminated as a cause for the attacks; she was an exceptionally normal, healthy woman. Audiograms showed quite normal hearing.

It was obvious that the patient's symptoms were due to "glossopharyngeal neuralgia", due to lesion of the petrous ganglion, the pain radiating mostly to the tympanic plexus of the tympanum, and she was placed on daily inhalations of trichlorethylene. The result was quite satisfactory. Within six weeks she was free of the attacks and during the following winter, which was one of exceptional severity, she had no attacks at all. She has been observed closely during the past four winters and no return of the seizures has occurred.

Trichlorethylene inhalations were used in this patient with excellent results. The ampule was broken on a cotton sponge and inhaled through the mouth and nose three times daily. Its use was suggested by the occasionally successful treatment of trigeminal neuralgia with trichlorethylene. At the time, I could find no reference in the literature to its use in glossopharyngeal neuralgia, but a few months later Hoover and Poppen(1) published an excellent review of the subject, and reported two cases successfully treated with trichlorethylene.

Glossopharyngeal and trigeminal neuralgias may occur in combination(2).

Unfortunately we cannot hope that glossopharyngeal neuralgia will yield very often to treatment with trichlorethylene, but fortunately Adson(3) has devised a relatively simple and safe operation for its cure. The ninth nerve is exposed and sectioned through a sub-occipital craniotomy, thus relieving permanently all the symptoms.

CLINICO-PATHOLOGICAL CONFERENCE

City Memorial Hospital
Winston-Salem.

Case No. 1, Mr. R. C. S., a white male about 46 years of age, entered the hospital with pain in the back, weakness, fever and chills of two weeks' duration. The patient dated the onset of his present illness to two years before admission, at which time he had had "muscle pains" running along both sides of his spine in the upper lumbar and lower thoracic region. This was accompanied by fever, weakness, and occasional chills. These attacks had recurred

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(1.) Honver, W. B. and Poppen, J. L.: Glossopharyngeal Neuralgia. J. A. M. A. 107:1015 (Sept.) 1936.
(2.) Peet, M. M.: Glossopharyngeal Neuralgia. Ann. Surg. 101:256 (Jan.) 1935.
(3.) Adson, A. W.: The Surgical Treatment of Glossopharyngeal Neuralgia. Arch. Neurol. & Psychiat. 12:487 (Nov.) 1924.

at intervals of three to four months. The present attack was similar to these previous attacks. The patient did not stop working until two days before he was admitted, having had two or three chills while still at work. The patient had also had a sensation of pain immediately beneath the xyphoid process, and stated that food did not seem to pass this area of his stomach until about three hours after meals. He was nauseated, but it was impossible for him to vomit.

Past history and the family history were negative except for a skull fracture four years ago, and pneumonia. He denied venereal disease.

PHYSICAL EXAMINATION: Revealed a well developed and somewhat obese white male who was restless and slightly dyspneic, and appeared acutely ill. Examination of the head was negative except for pyorrhea and many carious teeth. The pharynx was reddened. CHEST: Respiration was somewhat labored, but expansion was equal. There was an area of tenderness over the right costal cartilages just below the xyphoid process. The lungs were clear to percussion and auscultation. HEART: Blood pressure was 105/60. Position of maximum impulse was not palpable. The rhythm was regular, and rate was 110. There was a soft systolic murmur at the apex, which was transmitted over the entire precordial area. There was no thrill palpable. ABDOMEN: There was no tenderness, and no masses or viscera were palpable.

On admission temperature was 101.2°, pulse, 116 and respiration 22.

LABORATORY WORK ON ADMISSION:

Urine: Showed a trace of albumin and 3-5 hyalin casts.

Blood:

R. B. C.	5,200,000
W. B. C.	11,000
Stabs.	16%
Segs.	46%
Lymphs.	36%
Monos.	2%
Hb.	17 grams

There were no malarial parasites present.

Smears from the gums showed staphylococcus.

Seven days after admission the patient developed dullness at the left lung base with a few rales in both bases. The heart sounds were of poor quality, with no change in the heart murmur. The eye grounds showed indistinctness of the margins of the discs, with a recent flame-shaped hemorrhage present at the temporal side of the right disc, and slight arterio-venous compression. The blood pressure at this time was 80/50. The patient began to cough, and had showers of rales over the anterior portion of the right chest, with a few rales at the left base and in the left axilla. X-ray examination revealed a patchy consolidation at the left upper lobe and the right middle and lower lobes; the heart was markedly enlarged in the transverse and long diameters. The patient's condition grew steadily worse. The heart became irregular, and the blood pressure remained extremely low. The physical signs in the chest increased until the patient died twelve days after admission. The urine showed a trace of albumin throughout the stay in the hospital, with hyalin and granular casts present. The sputum showed staphylococci and streptococci. The blood cultures were negative. Cultures for typhoid fever were negative. Agglutination for typhoid, Brucella Abortus, B. Proteus X 19, B. tularense and B. para typhosus A. and B. were negative. The red count remained over four and a half million. The white count remained between fourteen and seventeen thousand with a moderate increase of polymorphonuclears. The stools were negative for parasites and ova. The sputum was negative for tubercle bacilli. The temperature continued elevated throughout the course, ranging between 101°F. and 103°F. The pulse ranged between 100 and 120. Respirations increased from 22 on admission to 45 on the day before death.

CLINICAL DISCUSSION: This case presents the picture of an obese white man of 46 who died apparently of pneumonia. The fact that he was ill for two years with recurring chills, fever, and pains in the back leads one to suspect a renal lesion such as pyelitis, pyelonephritis, or multiple intracapsular or subcapsular abscesses. At any odds, he seems to have had some chronic low grade pyogenic infection for two years.. His terminal illness for which he was admitted to the hospital took its onset as the other episodes had done, but was more severe and was climaxed by pneumonia and death.

The findings of marked cardiac dilation, a heart murmur, and finally of a petechial hemorrhage in the retina, point definitely toward bacterial endocarditis. There should be embolic lesions in the kidneys, spleen, and other viscera.

It is difficult to conceive of this man's clinical picture as being at all typical of subacute bacterial endocarditis, as there was no wasting, anemia, or evident pre-existing rheumatic valvular or congenital heart disease. It seems the conservative thing to say that he had bacteremia and likely acute endocarditis of short duration, with death due to pneumonia and heart failure.

A point to bring out here is that if one has reason strongly to suspect bacteremia, repeated blood cultures should be performed, the blood being drawn while the temperature is down as well as during its height following chills. Most bacteria are definitely attenuated by heat, and so might be grown more easily if cultured from media of normal body temperature. The case in point had only one blood culture, which showed no growth. Some strains of streptococcus viridans are grown with great difficulty and only after many attempts with various culture media. Some are even anaerobic.

Pain in the back has been found in my experience to be a very common accompaniment of bacterial endocarditis, but the pain in this case seems not to have been caused by this disease, or the clinical picture would have manifested itself in two years time.

AUTOPSY: The autopsy showed an acute bacterial endocarditis with complete destruction of two of the aortic leaflets, and a large mass of vegetations in one of the sinuses of valsalva, which extended through the wall of the sinus and projected into the cavity of the right auricle just above the tricuspid ring. There was red hepatization of both lungs, and a thrombus in a small pulmonary artery in the left lower lobe. Staphylococci were obtained from the vegetations in the heart.

DISCUSSION: Autopsy showed a case of an acute ulcerative bacterial endocarditis caused by the staphylococcus, with early consolidation of the lungs. The presence of severe pyorrhea, with staphylococci from the gums, suggests that the site of origin of this endocarditis was the pyorrhea. The history of muscle pain in the back may well have been also a result of the pyorrhea, with transitory invasion of the blood stream by organisms. There was no anatomrical explanation for the discomfort in the epigastrium.

BULLETIN BOARD

NOTES FROM THE OFFICE OF THE SECRETARY-TREASURER

There have been numerous inquiries from physicians in the twenty unorganized counties as to the proper procedure in joining the State Society. Under our Constitution and By-Laws a choice is given: they may send their annual dues of $8.00 direct to this office; or, they may join any adjoining organized County Society and send their dues through its secretary.

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The Duplin County Medical Society has been reorganized with Dr. B. B. McGuire of Kenansville as Secretary.

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Membership in the House of Delegates is based on the ratio of one delegate for each 25 members. The County Societies are urged to send in correct names and addresses of all delegates prior to March 1, thereby saving the usual loss of time and confusion in organizing the House of Delegates at the annual meeting. This is to be held in the Carolina Hotel, Pinehurst, May 13, 14, and 15.

T. W. M. Long, M.D.
Secretary-Treasurer.

American Board of Obstetrics and Gynecology Examinations

The general oral and pathological examinations (Part II) for all candidates (Groups A and B) will be conducted by the entire Board at the Atlantic City Hospital, Atlantic City, N. J., from Friday, June 7, through Monday, June 10, 1940, prior to the opening of the annual meeting of the American Medical Association in New York City on Wednesday, June 12, 1940. Candidates are requested to note that the dates of the examinations have been advanced one day from those previously announced.

Applications for admission to Group A, Part II, examinations must be on file in the Secretary's Office not later than March 15. 1940.

Formal notice of the time and place of these examinations will be sent each candidate several weeks in advance of the examination dates.

Candidates for **reexamination** in Part II must make written application to the Secretary's Office before April 15.

The annual dinner of the Board will be held in New York City on Wednesday evening, June 12, 1940, at the Hotel McAlpin. For further information and application blanks, address Dr. Paul Titus, Secretary, 1015 Highland Building, Pittsburgh, Pennsylvania.

South Atlantic Association of Obstetricians and Gynecologists

The Annual Meeting of the South Atlantic Association of Obstetricians and Gynecologists was held at the Jefferson Hotel in Richmond, February 9 and 10. The program was as follows:

Friday, February 9

9:30 A.M.:
- R. T. Ferguson, Charlotte, N. C.
  "A Review of the Data on 600 Women Tested for Patency of the Fallopian Tubes".
  Discussants:
  1. F. Richards, Jacksonville, Fla.
  2. Kermit Brown, Asheville, N. C.
- J. Randolph Perdue, Miami, Fla.
  "The Postpartum and Postoperative Bladder".
  Discussants:
  1. Manley Hutchinson, Columbia, S. C.
  2. H. H. Ware, Richmond, Va.
  Guest Speaker: Phillip Williams, Philadelphia, Pa.
- F. Bayard Carter, Durham, N. C.
  "Late Toxemias of Pregnancy with Analysis of Postmortem Findings".
  Discussants:
  1. R. A. Bartholomew, Atlanta, Ga.
  2. Joseph Baer, Richmond, Va.
  President's Address: Robert E. Seibels, Columbia, S. C.

6:00 P.M.:
President's Party. Jefferson Hotel.

7:00 P.M.:
Banquet. Howard W. Blakeslee, Science Editor, Associated Press, New York, Speaker.

Saturday, February 10

9:30 A.M.:
- R. B. Greenblatt, Augusta, Ga.
  "The Estrogenic Activity of Diethylstilbestrol".
  Discussants:
  1. E. C. Hamblen, Durham, N. C.
  2. T. J. Williams, Charlottesville, Va.
- R. B. Dunn, Greensboro, N. C.
  "Asphyxia Neonatorum".
  Discussants:
  1. W. A. Hart, Columbia, S. C.
  2. C. J. Collins, Orlando, Fla.
- Guest Speaker: Arthur Curtis, Chicago, Ill.
- Dr. G. R. Holden, Jacksonville, Fla.
  "The Use of Radium in Treating Menopausal Hemorrhages of Benign Origin".
  Discussants:
  1. W. R. Payne, Newport News, Va.
  2. J. D. Parker, Greenville, S. C.
- Dr. C. J. Andrews, Norfolk, Va.
  "The Third Stage of Labor with a Description of a New Method of Expression of the Placenta"
  Discussants:
  1. Hunter Jones, Charlotte, N. C.
  2. O. R. Thompson, Macon, Ga.

American Academy of Pediatrics

The District of Columbia members of the American Academy of Pediatrics will be hosts for the Annual Meeting of Region 1 of the American Academy of Pediatrics on April 4th, 5th and 6th, 1940, at the Mayflower Hotel, Washington, D. C.

Architect's sketch of a bird's-eye view of the Bowman Gray School of Medicine, and enlarged North Carolina Baptist Hospital in Winston-Salem as it will appear after completion. In the foreground is the new wing to be added to the present hospital and also shown is the four-story addition to be constructed on the south end of the hospital. At the right is the medical school building which will be directly connected on all floors with the hospital. Total cost of the hospital addition and the medical school, affiliated with Wake Forest College, together with equipment, will be approximately $750,000.00.

BOWMAN GRAY SCHOOL OF MEDICINE OF WAKE FOREST COLLEGE

Plans for the construction of the Bowman Gray School of Medicine of Wake Forest College and for the enlargement of the North Carolina Baptist Hospital are nearing completion, and it is thought that work on the building will begin around June 1.

The medical school building will be constructed across the north end of the present hospital, directly adjoining it. The hospital itself will be tripled in size by the addition of two wings—one at the rear, six stories high, and the other at the south end of the building, four stories high—and by the enlargement of the kitchen wing. Among the features of the medical school, which will be large enough to accommodate a maximum of 50 students in each class, will be an auditorium with a seating capacity of 300 and a library with a 50,000 volume capacity. In the enlarged hospital an ampitheatre with 100 seats will be built next to the operating room. Two floors of one wing will be given over to pediatrics.

Although the medical school and hospital will be separately owned and financed, they will be served by a joint professional staff. The school expects to cooperate with all other medical institutions in Winston-Salem and Forsyth County.

The total expenditure on buildings and equipment will be about $750,000, $300,000 of which will go for the medical school building alone. Funds for the medical school are being provided by tho Bowman Gray Foundation. More than $200,000 has been subscribed throughout the state for the additions to the hospital.

Northup and O'Brien are the architects.

NEWS NOTES FROM DUKE UNIVERSITY SCHOOL OF MEDICINE

On January 9 Dr. Charles L. Scudder, Fracture Surgeon, of Boston, Mass., held a clinic for the staff and students on "Emergency Splinting of Fractures".

NOTES FROM THE DIVISION OF PUBLIC HEALTH, UNIVERSITY OF NORTH CAROLINA

Dr. Harold W. Brown, Professor of Public Health, is making a survey of the parasites of a representative sample of the population of the state. He is making a special study of the problems of malaria and hookworm, and has recently published on the subject: "A Survey of Intestinal Helminths in Orange County, N. C.," and "A Note of the Prevalence of Intestinal Helminths in Orange County, N. C."

Dr. Brown, in collaboration with Dr. James C. Andrews, Professor of Biological Chemistry in the School of Medicine, is studying the problem of the distribution of quinine in the blood under various conditions, and other questions relating to the better treatment of malaria.

Dr. William L. Fleming, formerly of the Johns Hopkins School of Medicine, has been added to the faculty of the Division of Public Health as Professor of Syphilology. He will continue research in syphilis and conduct special courses in syphilology.

Dr. Daniel F. Milam, Professor of Nutrition in the Division of Public Health, is making a study of the nutritional defects in this state. His studies will include both laboratory and clinical observations on the dietary defects leading to vitamin deficiencies.

Dr. Milton J. Rosenau is Chairman of a Board appointed by Surgeon General Thomas Parran, of the U. S. Public Health Service, to report on the health hazards incident to use of city wastes in land-fill operations in Queens County, New York.

Dr. Roy Norton, Professor of Public Health Administration, is making special studies on public health administration and government with reference to health in the South.

Dr. Herman G. Baity, Professor of Sanitary Engineering, is making special studies of textile wastes, water purification, sewage disposal, etc.

Professor H. B. Gotaas, of the Engineering Department, is carrying on studies on the biological oxidation of sewage wastes in fresh and sea water at different temperatures, and on the control of algal growths on the walls of swimming pools.

Professors Baity and Gotaas, with the assistance of Mr. Ralph Porges and Mr. Robert K. Horton, under a special grant from the Textile Foundation, are carrying on investigations on the control of textile waste pollution.

Dr. Albert J. Sheldon, instructor in public health, is working with Dr. Brown on the treatment and epidemiology of dog heartworm. Their studies on the treatment of these parasites are being conducted with the aim of finding a successful treatment for human filariasis.

A number of research scholars are engaged in the various departments of the Division of Public Health. Mr. Sidney F. Ascher, with the assistance of Mr. Abraham Rotman, is making a study of diptheria carriers; Mr. A. E. Williamson, Jr., is working on a study of bacterial air pollution and methods of control; Mr. Emil T. Chanlett is working on indices for swimming pool safety; Mr. William A. Moggio is working on the fates of certain parasites in different processes of sewage treatment; Mr. R. F. Hill, Jr., is working on the characteristics of institutional and residential sewage; Mr. Thomas J. Brooks, Jr., is working on influenza; and Mr. William W. Taylor, Jr., is working on the malaria and hookworm survey.

The Division of Public Health offers one short course each fall. It has seven full-time members on its faculty: Dr. Milton J. Rosenau, Dr. Herman Glenn Baity, Dr. Harold W. Brown, Dr. J. W. Roy Norton, Dr. William LeRoy Fleming, Dr. Daniel Franklin Milam, and Professor H. B. Gotaas, and enjoys the advantage of the cooperation of Dr. Carl V. Reynolds, Secretary and State Health Officer of the N. C. State Board of Health, who gives a course in public health.

The Division of Public Health now offers graduate courses leading to the degrees of Doctor of Public Health, Doctor of Philosophy in Public Health, Master of Public Health, Master of Science (with designation), as well as the Certificate in Public Health.

Through the interest of Dr. V. Korenchevsky, of the Lister Institute of Preventive Medicine of London, an international club has been formed to study various aspects of the processes of ageing—"Club For Research On Ageing". The American division of this Club met in Washington on January 12 and 13 to effect an organization and proceed with discussions and research projects which may throw light on various phases of the ageing process. The members of the Club are as follows: Professors W. A. Allen, of Washington University; W. Bauer, Harvard University; Walter B. Cannon, Harvard University; Alfred E. Cohn, Rockefeller Institute for Medical Research; E. V. Cowdry, Washington University; E. T. Engle, Columbia University; C. G. Hartman, Carnegie Institution of Washington, Johns Hopkins University; A. Baird Hastings, Harvard University; F. L. Hishaw, Harvard University; K. S. Lashley, Harvard University; C. M. McCay, Cornell University; Wm. deB. MacNider, University of North Carolina; J. H. Means, Harvard Medical School; W. R. Miles, Yale University; R. A. Moore, Washington University; Jean Oliver, Long Island College of Medicine; Oscar Riddle, Carnegie Institute, Cold Springs Harbor, Long Island; Vincent duVigneaud, Cornell University.

The officers elected at this organization meeting were Wm. deB. MacNider, Chairman; R. A. Moore, Secretary. Executive Committee: W. B. Cannon, E. T. Engle and R. A. Moore.

The American Division of this international club anticipates meetings in the future with similar clubs that have been organized in England, the Scandinavian countries, and Continental Europe. It is the hope of such informal groups of investigators that they may be of mutual assistance, and through such assistance advance research now in progress and projects which may be undertaken by various members of the different groups.

STATE BOARD OF CHARITIES AND PUBLIC WELFARE

After being without a Director for the Mental Hygiene Division for six months, the State Board of Charities and Public Welfare has appointed Dr. J. Watson to that position. Dr. Watson graduated from the Northwestern University Medical School, and served an internship in a Chicago hospital, specializing in surgery. For ten years he was superintendent and surgeon of a charitable hospital in Puerto Rico, and for his work in surgery there was made a fellow of the American College of Surgeons. In 1934 he studied Neuro-psychiatry in Columbia University Post-Graduate Medical School, New York City, and later was on the staff of the Elgin State Hospital in Illinois. For the past three years he has been on the staff of the Worcester State Hospital, Worcester, Mass., holding the position of Director of the Worcester Mental Health Clinic and Family Care Department. He is a diplomate of the American Board of Psychiatry and Neurology.

Dr. Richard F. Richie was named Assistant Director in charge of the Children's Unit. Dr. Richie is a graduate of the University of Buffalo College of Medicine, 1937. After a thorough grounding in Pediatrics, he served as Assistant Physician to the Harrisburg State Hospital. Then he was given a Commonwealth Fund Fellowship at the Child Guidance Clinic of Cleveland (twenty-two months). He came to North Carolina July 1, 1939, from Nebraska, where he was Staff Psychiatrist to the Child Welfare Division, Board of Control. Dr. Richie is a Fellow of the A. M. A. and a member of the American Psychiatric Association, the American Orthopsychiatric Association, the International Association for Exceptional Children, and the American Association on Mental Deficiency.

SOUTHEASTERN SURGICAL CONGRESS

Dr. R. B. McKnight, Charlotte, N. C., Chairman of the North Carolina Division of the Southeastern Surgical Congress, makes the following announcement:

The Southeastern Surgical Congress will hold its Eleventh Annual Assembly in Birmingham, March 11, 12, 13, 1940, at the Tutwiler Hotel. The completed programs will be mailed out between the 15th of February and the first of March. Make plans to attend. For information, write Doctor B. T. Beasley, Secretary-Treasurer, 701 Hurt Building, Atlanta, Ga.

1940 Program
Birmingham Assembly of the Southeastern Surgical Congress

Gynecology

Dr. Quitman U. Newell, St. Louis: "Common Lesions of the Vulva, and Their Teatment."

Dr. C. J. Andrews, Norfolk: "Pelvic Supports—Their Injury and Repair."

Dr. Robert A. Ross, Durham: "Sex Endocrinology and Pelvic Surgery."

Laryngology

Dr. Edward A. Looper, Baltimore: "The Diagnosis and Surgical Treatment of Carcinoma of the Larynx."

Otology

Dr. S. S. Hall, Clarksburg, West Va.: "Chronic Exuative Sclerosing Mastoiditis."

Ophthalmology

Dr. R. O. Rychener, Memphis: "A Simple Technique for Glass Ball Implantation Following Enucleation of the Eye Ball."

Medicine

Dr. James K. McGregor, Hamilton, Canada: "Dysfunction of the Thyroid Gland as a Cause for Premature Old Age."

Dr. T. Z. Cason, Jacksonville, Fla.: Subject to be announced later.

Dr. Francis M. Massie, Lexington, Ky.: "Amebic Colitis as a Cause of Abdominal Pain."

Dr. K. K. Sherwood, Seattle: "Classification and Treatment of Chronic Arthritis."

Proctology

Dr. Martin S. Kleckner, Allentown, Pa.: Subject to be announced later.

Dr. Louis A. Buie, Rochester, Minn.: "Management of Anal Fistulas in Office and Hospital."

Anaesthesia

Dr. C. N. Carraway, Birmingham: "Pentothal Sodium Oxygen Anaesthesia."

Surgery

Dr. Herbert Acuff, Knoxville: "The Surgical Treatment of Pulmonary Tuberculosis With a Survey of End Results."

Dr. Russell B. Bailey, Wheeling, West Va.: "Surgical Treatment of Obstruction at the Cardiac Orifice."

Dr. Randolph L. Clark, Jackson, Miss.: "Recent Advances in the Management of Intestinal Obstruction."

Dr. George Curtis, Columbus, Ohio: "The Rationale of Splenectomy in the Treatment of Certain Anemias."

Dr. T. C. Davison, Atlanta: "Breast Tumors. Moving Picture in Color."

Dr. Michael de Bakey, New Orleans: "Significant Factors in the Prognosis and Mortality of Perforated Ulcer."

Dr. James W. Gibbon, Charlotte: "Gastro-Jejunal Ulcer with Case Reports."

Dr. Stuart W. Harrington, Rochester, Minn.: "Surgical Treatment for Calcified Constricting Pericardium."

Dr. Frank S. Johns, Richmond: "The Progress in the Development of Extrapleural Thoroplasty in the Treatment of Pulmonary Tuberculosis."

Dr. J. B. Lukins, Louisville: "Post-operative Pulmonary Complications."

Dr. J. M. Mason, Birmingham: "C. Jeff Miller Memorial Lectureship."

Dr. Roy D. McClure, Detroit: "The Modern Treatment of Burns."

Dr. George Pack, New York City: "The Diagnosis and Treatment of Malignant Tumors of the Skin."

Dr. Edwin G. Ramsdell, New York City: "The Prevention of Wound Disruption."

Dr. J. D. Rives, New Orleans: "The Splenic Anemias: Present Conception of the Etiology, Diagnosis and Treatment, With Some Suggestion on Surgical Technique."

Dr. R. L. Sanders, Memphis: Presidential Address.

Genito-Urinary Surgery

Dr. Edgar G. Ballenger, Atlanta: "The Importance of Early Diagnosis of Genito-Urinary Diseases."

Dr. Robert Herbst, Chicago: Subject to be anounced later.

Dr. Roy B. Henline, New York City: "Prostatic Disease With a Special Reference to the Various Causes and Types as well as Their Treatment."

Dr. Nelse F. Ockerblad, Kansas City: Subject to be announced later.

Dr. Lawrence P. Thackston, Orangeburg: "Suprapublic Prostatectomy With the Use of an Original Combination Hemostatic Drainage Bag."

Orthopedic Surgery

Dr. Austin T. Moore, Columbia: "The Treatment of Fractures of the Neck of the Femur by Internal Fixation With Four Adjustable Nails—An End Result Study."

Dr. Leslie V. Rush, Meridian: "Some Commonly Seen Fracture Cases in which Bad Results Frequently Occur."

Pediatric Surgery

Dr. Stanley J. Seegar, Milwaukee: "Pediatric Surgical Problems."

Neuro-Surgery

Dr. Cobb Pilcher, Nashville: "Surgical Aspects of Epilepsy."

Dr. Exum Walker, Atlanta: Subject to be announced later.

NORTH CAROLINA NEURO-PSYCHIATRIC SOCIETY

The North Carolina Neuro-Psychiatric Society met in Charlotte on January 26. The following program was given:

Afternoon Session

"Extra-Mural Neuropsychiatry and Neuropsychiatry in a General Hospital"—Dr. R. S. Crispell, Durham.

"Neurological Heredity in North Carolina"—Dr. William Allan, Charlotte.

"Frontiers in Psychological Medicine"—Dr. Kenneth E. Appel, Professor of Psychiatry, University of Pennsylvania—Guest Speaker.

Evening Session—Hotel Charlotte

Social Hour—5:45 P. M.—Lounge Room

Dinner—6:30

Round Table Discussion: "Acute Infections and Suppurative Conditions of the Brain and Spinal Cord—Sulfanilamide, etc."—Dr. Barron, Leader; Drs. Alexander, Adams, Motley, Hovis, Teasdale, Woodall, Leinbach, Hart, Baker, Ashe, Hunt, Robert Moore, and Selby.

"Clinical and Pathological Discussion of Brain Tumors"—Dr. Edgar F. Fincher, Professor Neurosurgery, Emory University—Guest Speaker.

The officers of the society are: Dr. W. D. Hall, Raleigh, president; Dr. Mark Griffin, Asheville, vice president; Dr. Malcolm Kemp, Pine Bluff, secretary-treasurer.

STATEWIDE SYPHILIS SURVEY

Out of 9,533 prisoners in eighty camps who were given serological tests for syphilis in a statewide survey conducted cooperatively by the State Board of Health and the North Carolina Highway and Public Works Commission, 2,229, or 23.3 per cent, were found to be syphilitic. The survey was made with the aid of the Reynolds Foundation.

The results, announced by Dr. Carl V. Reynolds, State Health Officer, following conferences with prison officials, showed that 8.5 per cent of all white prisoners and 34.2 per cent of all Negro prisoners reacted positively to the tests.

"The object in making this exhaustive survey," said Dr. Reynolds, "was to get that portion of our prison population infected with syphilis under competent treatment. Cooperative arrangements have been made whereby the State Board of Health will furnish one-half the drugs, while the prison department will meet the other half of the expense for this purpose."

COUNTY SOCIETIES

BUNCOMBE COUNTY MEDICAL SOCIETY

The Buncombe County Medical Society held two meetings in January in the Council Chambers of the City Hall. On January 15 Dr. Wm. Murray Hollyday delivered his Presidential Address, Dr. Samuel S. Cooley presented a case of Cerebral Aneurysm, and Dr. J. T. Saunders reported a case of Slipped Femoral Epiphysis. On January 22, Dr. R. C. Bunts gave a paper on "Congenital Obstruction of the Bladder Neck", which was discussed by Dr. W. C. Lott. The officers of the Buncombe County Medical Society for 1940 are: Dr. W. M. Hollyday, president; Dr. John T. Saunders, vice-president; Dr. G. W. Kutscher, Jr., secretary.

FORSYTH AND GUILFORD COUNTY MEDICAL SOCIETIES

On January 11 the Forsyth and Guilford County Medical Societies held a joint dinner meeting at the Smokehouse in Winston-Salem. The guest speaker was Dr. Foster Kennedy, Professor of Neurology at Cornell University. Dr. Kennedy spoke on "The Organic Background of Mind".

HALIFAX COUNTY MEDICAL SOCIETY

The Halifax County Medical Society held its regular monthly meeting Friday evening, January 12, at the Roanoke Rapids Hospital in Roanoke Rapids, with Dr. W. G. Suiter, president of the society, presiding.

Dr. Herman Farber and Dr. James Whitfield of Richmond, Virginia, presented papers on "Care of the Newborn Baby's Skin" and "Puerperal Sterilization", in which attention was called to the most recent developments in these fields of medical science. Dr. T. W. M. Long, Secretary of the State Medical Society, asked that the former article be submitted to the North Carolina Medical Journal for publication.

Dr. Raleigh Parker of Jackson, Dr. R. B. Outland of Rich Square and Dr. Robert F. Young, Health Officer of Halifax County, were admitted to the society.

Following the scientific meeting, election of officers for the coming year was held, in which Dr. F. W. M. White of Halifax was elected president; Dr. C. B. Robertson of Jackson, vice-president; Dr. Robert F. Young of Weldon, secretary and treasurer; and Dr. W. G. Suiter of Weldon, delegate to the State Medical Society, with Dr. M. S. Broun as alternate delegate.

Dr. Lupton, from the division of Child Hygiene of the State Public Health Department, was a visitor at the meeting.

Under Dr. W. G. Suiter's able leadership the society has completed a very successful year in maintaining good attendance and in obtaining outstanding physicians to appear on the programs.

Robert F. Young, M.D.
Secretary and Treasurer
Halifax County Medical Society.

ROCKINGHAM COUNTY MEDICAL SOCIETY

At the January meeting of the Rockingham County Medical Society, held January 20 at the City Memorial Hospital in Reidsville, Dr. James W. McAnally of Reidsville was elected president. Other officers elected for 1940 were: Dr. Keenan Casteen, Leaksville, vice president; and Dr. W. A. Johnson, Reidsville, secretary-treasurer. Delegates to the state medical society are, Drs. B. F. Cozart and William Hester, with Dr. J. B. Ray and Dr. J. W. McGehee as alternates. A paper was read by Dr. Newton G. Wilson, of Madison.

NEWS NOTES

At the twentieth annual New Year meeting of the Marlboro County Medical Society, held in Bennettsville, S. C., on January 11, Dr. Robert A. Ross, Associate Professor of Obstetrics and Gynecology at Duke University, presented a paper on "The Management of Prolonged Labor". Dr. Paul P. McCain, of Sanatorium, led in the discussion of a paper by Dr. W. Atmar Smith on "The Differential Diagnosis of Pulmonary Tuberculosis".

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The Third Annual Session of the Atlanta Graduate Medical Assembly was held January 15-18 at the Biltmore Hotel in Atlanta. Among the speakers was Dr. Watt W. Eagle, Associate Professor of Surgery at the Duke University School of Medicine, who spoke on "Sphenopalatine Neuralgia."

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At the annual meeting of the Birth Control Federation of America, held in New York on January 25, Dr. Carl V. Reynolds was named on the National Committee for Planned Parenthood, which is to sponsor a nation-wide campaign for birth control. Margaret Sanger is chairman of the committee. Dr. Roy Norton of the University of North Carolina discussed "Planned Parenthood in a General Health Program" before a symposium on "Race Building in a Democracy". North Carolina has the first state-sponsored birth control program in the Union.

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Dr. Irving E. Shafer has been elected Chief of Staff of the Rowan Memorial Hospital, succeeding Dr. James C. Eagle. Other officers elected for 1940 were Dr. Walter L. Tatum, Assistant Chief of Staff, and Dr. T. W. Seay, secretary.

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Dr. I. E. Shafer, of Salisbury, and Miss Jane Honeycutt, of Franklinton, were married in New York on January 16, at "The Little Church Around the Corner".

RESOLUTION ADOPTED BY THE FORTY-FIRST ANNUAL CONVENTION OF THE NATIONAL ASSOCIATION OF RETAIL DRUGGISTS

WHEREAS, since the comparatively recent discovery and developments of vitamins, many avenues of distribution such as mail order houses, grocers, etc., are selling such vitamins, and

WHEREAS, the sale by such outlets is detrimental to public welfare; therefore, be it

RESOLVED, that in the interest of public health the sale of such products should be restricted to drug stores, and be it further

RESOLVED, that until such time as proper safeguards to circumscribe the sale of vitamin products can be promulgated, the N.A.R.D. specifically requests vitamin manufacturers to restrict their sale to drug channels, and be it further

RESOLVED, that a copy of this resolution be sent to the American Medical Association and to all state medical societies.

WOMAN'S AUXILIARY

Officers

President: Mrs. C. F. Strosnider, Goldsboro.
President-Elect: Mrs. C. R. Hedrick, Lenoir.
Chairman of Past Presidents: Mrs. P. P. McCain, Sanatorium.
Corresponding Secretary: Mrs. Jack Harrell, Goldsboro.
Recording Secretary: Mrs. J. D. Freeman, Wilmington.
Treasurer: Mrs. C. E. Judd, Raleigh.

AN APPEAL TO THE DOCTORS FROM THE AUXILIARY

Please take Hygeia through the Auxiliary.

The reason is: The Auxiliary maintains a bed at the Sanatorium where doctors and their children, nurses, and other tubercular patient without the necessary funds, are nursed back to health and usefulness.

The Auxiliary is trying to raise an endowment fund of $10,000 to meet the expenses of this bed. For a limited time the Auxiliary gets $1.25 for every $2.50 subscription to *Hygeia.*

Please help this worthy cause by sending your check and address for the subscription to this magazine to Mrs. K. B. Pace, State *Hygeia* Chairman, Greenville, N. C.

Thank you!

ANNA L. STROSNIDER.

MINUTES OF THE SEMI-ANNUAL MEETING OF THE BOARD OF DIRECTORS OF THE AUXILIARY TO THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA, THURSDAY, OCTOBER 12, 1939

The Board of Directors of the Auxiliary to the Medical Society of the State of North Carolina met at Sanatorium, North Carolina, Thursday, October 12, 1939, at noon. Before the business session, the board members were guests of Mrs. P. P. McCain, at a most enjoyable luncheon. The session was called to order by Mrs. C. F. Strosnider, president of the auxiliary. Mrs. Isaac Manning led the members in the Lord's Prayer as an invocation.

In her introductory remarks, Mrs. Strosnider referred to the fact that she had not been formally installed as president (a severe case of mal de mer rendering her incapable of receiving the gavel from Mrs. Elliott at the annual meeting aboard ship). In spite of this handicap, she assured the Board that she would take great pride in doing her best to carry out the objectives and ideals of our organization. Mrs. Strosnider also paid tribute to the efficiency of Mrs. Elliott as past president, and thanked her for her help in the organization of this year's work. The president welcomed the Board members, expressing her reliance upon them in building an "Auxiliary house with a firm foundation that gives security, refuge, and strength."

Mrs. P. P. McCain bade the members welcome in her own gracious manner.

The roll call showed eighteen members present. At this time the president recognized Mrs. J. B. Cranmer, Wilmington, N. C., welcoming her, and calling attention to her speech "State Medical Auxiliary" in the 1935 Medical Transactions. Mrs. Strosnider urged all members to read this speech.

Mrs. Strosnider announced that she had received several letters from members of the board expressing their regret at not being able to attend the meeting. It was moved by Mrs. P. P. McCain, seconded by Mrs. R. S. McGeachy, that the secretary write notes of sympathy to Mrs. C. R. Hedrick on the death of her brother, and to Mrs. K. B. Pace and Mrs. J. C. Tayloe on their illnesses. There were notes of regret at their absence from our Advisory Board.

Mrs. P. P. McCain, Chairman of Past Presidents, reported that they were "all in good condition". She invited us to visit Mr. L. S. Sawyer who now occupies the McCain bed at the Sanatorium.

The president called attention to two corrections to be made on our stationery. Dr. S. D. Craig is chairman of the Advisory Board, and Mrs. K. B. Pace has been appointed *Hygeia* Chairman in the place of Mrs. W. E. Overcash.

Mrs. Strosnider asked every one at this time to secure a copy of the by-laws, and a copy of each of the written reports of the various chairmen. These reports entailed a great amount of work and typing, and the chairmen were thanked for their successful efforts. The board members were asked to clip these reports in their note books and to read them carefully. The purpose of these written reports is that they shall be information sheets, to give in convenient form the past, present, and future of the offices and committees. Mrs. P. P. McCain was asked by the president to edit these sheets. The president presented a questionnaire to be used as an examination for auxiliary members. Mrs. Isaac Manning moved and Mrs. R. S. McGeachy seconded that Mrs. P. P. McCain prepare a list of answers for the questionnaire — these answers to be published together with the minutes.

Mrs. Strosnider urged that we use our local newspapers in getting the ideals and objectives of our organization before the public. She suggested that we give them a sheet of our official stationery, on which we write: (1) the auxiliary dues and how they are spent, (2) a list of philanthropies and outstanding things in which we participate, (3) the historical facts of the McCain Bed, (4) the date of auxiliary meetings.

Speaking of the plan for the year's work, Mrs. Strosnider announced that our motto would be "Be Informed and Inform Others" as to objectives of auxiliary, history of auxiliary, recent health laws, socialized medicine, etc., and from our Advisory Board learn how to disseminate knowledge about them. The councillors were urged to do personal work, to see every eligible doctor's wife in the district and invite her to join the auxiliary, to enlarge the membership, and to set a new record by collecting dues early. Each officer was asked to know and perform her duty well.

Mrs. Joseph Elliott, first vice president in charge of councillors, urged all councillors to follow out persistently the outlined program of activity.

Mrs. Alfred Kent, second vice president, chairman of McCain Bed, spoke briefly on her written report.

The treasurer, Mrs. E. C. Judd, presented the following report: balance in General Expense Fund $180.88; balance in upkeep of McCain Bed Fund $296.98; amount in McCain Endowment Fund $1,426.66; amount in Student Loan Fund $619.79. Mrs. Judd moved the adoption of this report. Mrs. Joseph Elliott seconded the motion, and the report was unanimously accepted. Upon the motion of Mrs. Frederick Taylor and the second of Mrs. Joseph Elliott, Mrs. Judd was given a rising vote of thanks for her efficient service.

Next in order were the reports of the committee chairmen, all of whom referred briefly to the aforementioned written reports, which each board member had secured. Mrs. Isaac Manning moved, and Mrs. R. S. McGeachy seconded that the report of Mrs. Frederick Taylor, program chairman, be accepted and that she proceed with her activities. The motion was carried. The president showed the written ballot votes whereby she was authorized to appoint a legislative chairman and chairman of Jane Todd Crawford Memorial, which is a project of the Southern Medical Auxiliary. Mrs. Hamilton McKay of Charlotte was chosen Legislative Chairman and Mrs. Thomas Leslie of Kinston, Jane Todd Crawford Memorial Chairman.

The work of Mrs. Erick Bell, as historian, was emphasized. It shall be her duty to keep a complete and detailed history of the organization. Several councillors gave interesting and informative reports of the work done in their districts.

As new business, the president appointed Mrs. Ben Lawrence chairman of the nominating committee to name officers for the coming year. Other members, nominated from the floor, were as follows: Mrs. W. P. Knight (nominated by Mrs. F. R. Taylor, seconded by Mrs. Joseph Elliott); Mrs. J. R. Terry; Mrs. J. B. Sidbury; Mrs. W. H. Smith.

The president appointed Mrs. James W. Vernon as official representative to Southern Medical Association Meeting.

The president brought up the question of the auxiliary supporting a bed in Western Sanatorium. After some discussion, Mrs. Ben Lawrence made the motion, which was seconded by Mrs. J. W. Vernon, that we do support such a bed. The motion was carried. As a committee to investigate and propose plans for such work, the president appointed Mrs. P. P. McCain, Sanatorium; Mrs. Julian Moore, Asheville; Mrs. S. M. Bittinger, Black Mountain; and Mrs. M. L. Stevens, Asheville.

Mrs. Strosnider offered a prize of $5.00 to the district which has the largest percentage of paid up members by May 1, 1940.

Mrs. E. C. Judd read a tentative budget for the year and moved its adoption. Mrs. Lawrence seconded the motion. The budget was accepted.

Mrs. Strosnider announced that the State Medical Meeting will be held May 13, 14, and 15 at Pinehurst. She appointed as a program committee for the Auxiliary, Mrs. C. L. Gray, Sanatorium; Mrs. Earl Overcash, Southern Pines; and Mrs. R. A. Matheson, Jr., Raeford.

The president announced that the spring board meeting would be held sometime in March at her home. She graciously invited those members who live at a distance to be her over-night guests.

Mrs. Ben Lawrence stood to thank Mrs. P. P. McCain on behalf of the Board for her delightful hospitality, which we all enjoyed to the utmost.

Respectfully submitted,

LIDIE PENTON FREEMAN
(Mrs. J. D. Freeman)
Recording Secretary.

Members Present

- Mrs. C. F. Strosnider
- Mrs. P. P. McCain
- Mrs. J. A. Elliott
- Mrs. A. A. Kent, Jr.
- Mrs. E. C. Judd
- Mrs. J. D. Freeman
- Mrs. F. R. Taylor
- Mrs. R. S. McGeachy
- Mrs. I. H. Manning
- Mrs. W. E. Overcash
- Mrs. G. E. Bell
- Mrs. C. D. Thomas
- Mrs. H. W. McKay
- Mrs. T. S. See
- Mrs. W. T. Rainey
- Mrs. Ben Lawrence
- Mrs. W. P. Knight
- Mrs. J. W. Vernon

In Memoriam

DR. W. H. COWELL

Dr. W. H. Cowell, of Shawboro, died December 28, 1938, and was laid to rest in the family cemetery at Shawboro.

Dr. Cowell practiced medicine in Currituck County from his youth. He was the son of Dr. W. H. Cowell, Sr. and Mrs. Martha DeFord Cowell. He was educated at Roanoke College in Salem, Virginia and at the Universities of Kentucky and Pennsylvania. In college he stood high in fraternal circles.

Dr. W. H. Cowell, Sr., practiced medicine in Currituck County for several years. He represented his county in the General Assembly several terms, and was also treasurer of Currituck County for several years. Dr. Cowell followed somewhat in the footsteps of his father, taking great interest in the affairs of his county and state. He was a member of Governor Locke Craig's staff from 1912 to 1916, and a member of the Board of Directors of the State Hospital in Raleigh. He took great interest in highway work and was at one time chairman of the Currituck Highway Commission.

His church proclivities were with the Baptists. He was a Master Mason. Dr. Cowell's advice was sought as a financier in state and county affairs.

Dr. Cowell will be missed throughout the county by all classes; but next to his sister, Miss Sudie Cowell, and his brother, Virginius Cowell, those who will miss him most are those who depended on him in sickness and distress. He placed suffering humanity on the same plane and visited alike the palaces of the rich and the hovels of the poor, ministering at all times to their necessities.

He was a Democrat in politics, but was tolerant of the views of others.

Dr. Cowell never married. He had a most sympathetic and gentle demeanor in the sick room. He had a retiring nature and always frank and honest with no semblance of pretense. His daily work expressed the high ideals of our profession.

He was a member of the Seaboard Medical Association, the District Medical Society and others.

He lived a useful life and in deed fulfilled the sentiment expressed by the poet:

"'Tis a thought divine the wisest thought of sages
He who lives to bless his age and time has lived
for all the ages."

Dr. W. T. Griggs,
A friend and co-worker.

* * * * *

DR. JAMES DACOSTA HIGHSMITH

We, the members of the Cumberland County Medical Society, wish to express the sorrow we feel in the death of Dr. James DaCosta Highsmith, one of our honored and beloved members who served with distinction in the office of president, the highest honor we could confer upon him. His example, his influence, and his ideals were of a high order. His upright life and his high-toned Christian character will continue to exert a beneficent influence among us.

He was not only a well-beloved and successful physician, but also a public-spirited and influential citizen, interested in all the progressive movements that tended toward the development of the community and the upbuilding of the character of its citizens. Envies and strife found no harbor in his soul, and in all the contacts of his life he manifested to the highest degree that greatest of all virtues, charity.

We wish to express to the members of his family our deep sympathy in the loss they have sustained, and to assure them that his memory will ever be cherished by the members of this society. We rejoice with them in the asssurance that this separation is only temporary, for, through faith, we look forward to abundant entrance with him into a life of everlasting joy and peace.

We wish to have these resolutions spread on a special page in the minutes of this society, a copy sent to his family, and a copy published in the North Carolina Medical Journal.

Cumberland County Medical Society,
(Signed) O. L. McFadyen, M.D., Secretary.

* * * *

CHARLES STAPLES MANGUM

Charles Staples Mangum was born in Greensboro on July 14, 1870. His father was Adolphus W. Mangum, a member of the Faculty of the University of North Carolina from 1875 to 1890. His mother was Laura Overman, of Salisbury, N. C.

He graduated from the University of North Carolina with an A.B. degree in 1891. He was Physical Director at the University of North Carolina from 1890 to 1892, and a member of the faculty during 1891 and 1892. He was an end on the football team in 1891, and winner of a prize for the best all-round athlete in college in 1890. He was one of the original members of the University Glee Club and composed one of the verses of "Hark the Sound."

Dr. Mangum left the University of North Carolina in 1892 and went to Jefferson Medical College. He graduated there in medicine in 1894, and was winner of the Therapeutic prize at graduation. He was Assistant Demonstrator of Anatomy at Jefferson Medical School during 1894-95, and in 1895-96 was Assistant Surgeon at the Lehigh and Wilkesbarre Coal Company. He won the Appleton Prize for the best examination before the North Carolina Board of Medical Examiners in 1896. He did graduate work at the University of Chicago and Harvard

Medical School. He went back to the University of North Carolina in 1896 and was Professor of Physiology and Materia Medica there from 1896 to 1900. From 1900 to 1905 he was Professor of Pharmacology and Demonstrator of Anatomy. In 1905 he became Professor of Anatomy and held that position until his death.

It would be superfluous to tell any group of medical men in North Carolina what a great teacher of anatomy Dr. Mangum was. It suffices to say that his students, as advanced standing students in other institutions, always showed more knowledge of anatomy than the regular students of those institutions.

In 1933 there came to him a great honor: both unsought and, we think, unwished for. That was the office of Dean of the Medical School. He was Dean of the University of North Carolina Medical School from 1933 to 1937. During his Deanship, largely due to his efforts, a relationship was established between the State Board of Health and the Medical School, which in turn led to the creation of the Division of Public Health of the Medical School. This undoubtedly marked another great milestone in the development of the University of North Carolina Medical School. It was during his administration that the plans for the medical building which is just now being completed really began to take concrete form.

Dr. Mangum was a member of the University Medical School Faculty for forty-three years. He was a member of the Zeta Psi Fraternity, of The Order of Gimghoul, and of several other organizations.

Dr. Mangum was married in 1900 to Miss Laura Rollins Payne of Washington, D. C. He is survived by Mrs. Mangum and one son, Charles Staples Mangum, Jr.

We have sketched rather briefly some of the great accomplishments that Dr. Mangum has performed in the field of education and science. It is perfectly proper after having outlined these things, that we speak of Dr. Mangum in a more personal way, because many of us were his students. During the forty-three years he taught at the University of North Carolina, hundreds of students passed through his classes. He was known familiarly to the medical students as "Dr. Charlie." We don't believe that there is a student of his alive today who would not know whom you were talking about if you mentioned "Dr. Charlie." However, the student's familiarity with Dr. Mangum existed only in his heart, because Dr. Mangum in his classroom showed a dignity that demanded the respect of every student in his class.

Dr. Mangum was the soul of wit. His quips will be heard down through the years, wherever there is a medical student of his to recount them. He was the essence of gentleness and courtesy. A more understanding heart than his never beat. We all loved and still love him. His polish was not veneer. It never broke or wore off. He was a composite of the best types of the "Southern gentleman" which hundreds of authors have described.

We give you Charles Staples Mangum: A gentleman, a scholar, a teacher, and our friend.

(Signed) Dr. S. D. McPherson
Dr. T. C. Kerns
Dr. W. R. Stanford.

* * * * *

DR. MARTIN L. STEVENS

Dr. Martin L. Stevens, of Asheville, died suddenly at his home, 155 Montford Avenue, on Saturday morning, January 20. Dr. Stevens, the senior member of the Buncombe County Medical Society, was a native of Thornville, Ohio. After graduating from the Baltimore Medical College in 1891 and serving a year as resident physician of the Maryland General Hospital, he came to Asheville in 1899 as resident physician at Winyah Sanatorium, and later became physician-in-charge. After leaving this post, Dr. Stevens went to New York for post-graduate study, and entered private practice in the treatment of tuberculosis upon his return. He was a former member of the State Board of Medical Examiners, and in 1930 was president of the Medical Society of the State of North Carolina. From 1924 almost continuously until his death, he represented the state society in the House of Delegates of the American Medical Association. He was a charter member of the National Tuberculosis Association, and the first president of the State Tuberculosis Association.

Dr. Stevens was a Fellow of the A. M. A., a Fellow of the American College of Physicians, a member of the American Climatalogical Association and of the Southern Medical Association. He was a certified specialist of the American Board of Internal Medicine. He was married in 1894 to Miss Mary Lulu Patterson, who survives him. Of him one of his friends has written: "I hope that when I reach his age, I can be as well loved as he was. He was one grand man, a good physician, a calming influence when the waters became stormy, and a Christian gentleman of the highest rank."

BOOK REVIEWS

AN INTRODUCTION TO GASTRO-ENTEROLOGY. By Walter C. Alvarez, M.D. Price, $10.00. 778 pages. New York: Paul B. Hoeber, Inc., 1940.

This, the third edition of the work originally called THE MECHANICS OF THE DIGESTIVE TRACT, has been thoroughly revised and brought up to date. It is now nearly twice the size of the first edition, and covers the entire field of gastroenterology as fully as a single volume could. In the front of the book is a quotation from Pavloff: "I am convinced that it is by frequent interchange between the physiologist and the physician that the common goal of physiological science and of medical art will be most quickly and safely reached." Dr. Alvarez is perhaps the most successful combination of physiologist and physician living; and he also possesses the rare gift of knowing how to write what he knows in such simple and charming words that is a real pleasure to read after him. One feature of the book that will appeal to the busy reader is that each chapter except the last one has a comprehensive summary at the end. The final chapter, "On Books and Reading", does not lend itself to such treatment, and deserves careful reading in its entirety.

Besides its clear style, the contents of the book are enriched 186 illustrations, and a bibliography of more than 100 pages is added for those who care to follow any particular line of investigation. The type, the illustrations, and the binding of the book, all are a tribute to the art of the printer.

ENDOCRINE GYNECOLOGY. By E. C. Hamblen, B.S., M.D., F.A.C.S. Price $5.50. Pp. 453. Charles C. Thomas Co.

It has become increasingly difficult for the non-specialized reader to keep abreast of the advancing facts and the changing nomenclature of gynecologic endocrinology. It is well, then, that from time to time monographs on this subject should be issued both for the sake of the specialist and as a reference work for workers in other fields.

Hamblen's book is a clear and adequate presentation of this somewhat complex subject, proceeding in a logical way from physiology to pathologic alterations of endocrine functions. The chapters on sex-endocrine syndromes and growth abnormalities are especially useful, being well illustrated. Menstrual disorders, frequently so baffling to the less experienced in this field, receive extended consideration, which should prove helpful to every reader. The book has benefited by the excellent typographical treatment which we have learned to associate with the firm of Charles C. Thomas.

CLINICAL ALLERGY, ASTHMA AND HAY FEVER. By Francis M. Rackman, M.D. Price $7.50. Pp. 617. New York: The Macmillan Company, 1931.

In this book the field of allergy is covered so completely by a physician of such wide and thorough experience that one wonders why so many bibliographies are given. The book is divided into two parts. The first deals with hypersensitiveness; anaphylaxis in animals and man, why and how produced; the chemistry of hypersensitiveness; anaphylaxis and desensitization; the nature and origin of allergy. The author goes back to Greece for the beginning of the study of allergy and follows the history and methods of treatment up to the present. In this part the necessity for proper history taking and physical examinations is set forth.

The second part deals chiefly with the clinical manifestations of the different types of allergy, and goes thoroughly into the use and reactions of serums. The pathology of asthma is fully dealt with and illustrated. It is shown that many of the vague sufferings of people in the past have been due to allergic conditions; that advancement in allergy is adding more diseases to its field; that an allergist is not a man so far removed from the medical world as was once thought, but that allergy can be more thoroughly understood by each physician in practice. This book will be of great help to the medical man and to the student of allergy.

PHYSIOLOGICAL CHEMISTRY. By Albert P. Mathews, Ph.D., Andrew Carnegie Professor of Biochemistry, The University of Cincinnati. Sixth Edition. Illustrated. Price $8.00. Baltimore: The Williams & Wilkins Company, 1939.

The sixth edition of Mathews' PHYSIOLOGICAL CHEMISTRY has been thoroughly revised and brought up to date. Many new references have been added to older references which illustrate the historical background of the science. The practical section has been omitted and is published separately by the same publisher. To the reviewer this seems a considerable loss. The book is comprehensive and authoritative. The material has been selected to be of particular use to medical students, practitioners, and graduate students. This book needs no introduction to the medical profession, as it has been a standard work for twenty-four years.

MODERN MEDICINE IN THE UNITED STATES is a 40-page pamphlet by Dr. S. Adolphus Knopf of New York, printed by patients at the Potts Memorial Hospital for Rehabilitation. In it Dr. Knopf gives a comprehensive survey of present-day medical economic problems: compulsory sickness insurance, group practice, irregular practitioners, patent medicines, self-medication, criticism of organized medicine, venereal disease, the Wagner Bill and the National Health Program. After this survey, Dr. Knopf gives constructive suggestions for economy and efficiency. The author is entirely in sympathy with the family doctor, yet is mindful of the people's need for medical service. Its sanity makes it a valuable contribution to the study of a perplexing problem.

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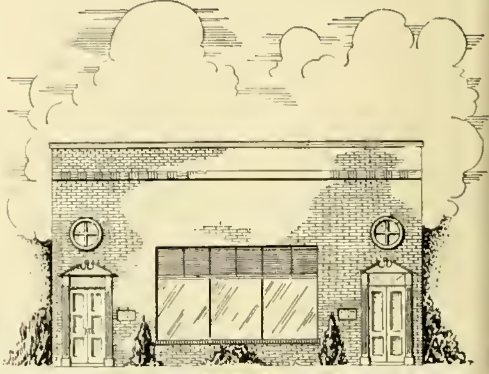

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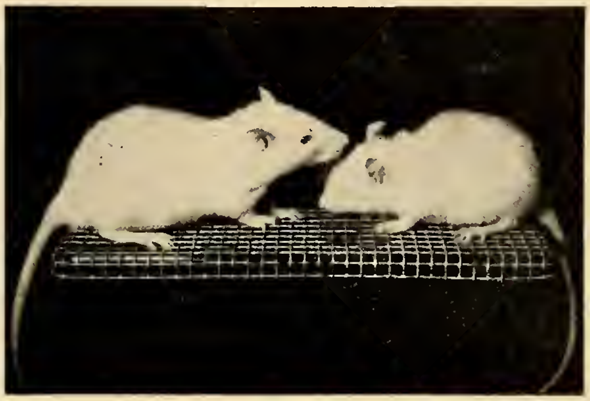
STUDIES IN THE AVITAMINOSES

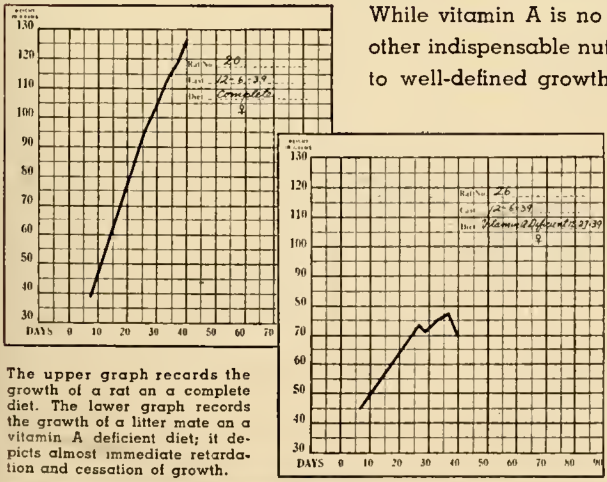
This page is the third of a series on vitamin deficiencies presented by the research division of The Upjohn Company because of the profession's widespread interest in the subject. A full color, two-page insert on the same subject appears in the March 9 issue of The Journal of the American Medical Association.

INHIBITION of growth in the rat produced by restriction of vitamin A in the diet. The animals, litter mates, were 21 days old at the start of the experiment which was continued for 33 days. The animal at right received a diet containing all nutritive substances except vitamin A; the animal at left, an adequate diet. Note the xerophthalmia in vitamin A deprived rat.



Retardation of Growth Due to Vitamin A Deficiency

While vitamin A is no more essential for growth than are other indispensable nutritional factors, its deprivation leads to well-defined growth retardation in man as well as in experimental animals. This action is so predictable that it is employed as a basis for one of the methods of vitamin A assay. The immediate effect of vitamin A deficiency on growth is cessation of endochondral bone formation. The curves reproduced illustrate the prompt growth-inhibiting effect of vitamin A deprivation in rats.



The upper graph records the growth of a rat on a complete diet. The lower graph records the growth of a litter mate on a vitamin A deficient diet; it depicts almost immediate retardation and cessation of growth.

UPJOHN

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VOL. 1 MARCH, 1940 NO. 3

MEDICAL RESEARCH: THE STORY OF SULFANILAMIDE

E. K. MARSHALL, JR., M.D.

Professor of Pharmacology and Experimental Therapeutics
The Johns Hopkins University

BALTIMORE

A School of Medicine has primarily two objectives: the training of future physicians and the advancement of knowledge by medical research. For the attainment of the first, the second, properly pursued, is necessary; and the two, wisely combined, may produce what the distinguished Dean of this School of Medicine recently described as "the biologically minded physician". Organized medical research, at least in the so-called pre-clinical subjects, is a recent innovation. With the partial exception of the anatomical laboratory, laboratories in medical schools for the training of students and for research are largely creations of the last three-quarters of a century. Except in two or three instances, all of the physiological laboratories worthy of the name have been established since the middle of the past century; the first pathological laboratory was founded by Virchow in Berlin in 1856; physiological chemistry as a separate discipline split off from physiology quite late, and Hoppe-Seyler headed the first independent laboratory devoted to this subject at Strassburg in 1872; pharmacology as the experimental science we now know began when Buchheim established its first laboratory in his private house at Dorpat in 1849. Coincident with the growth of organized laboratories for medical research, the whole face of medicine has changed, and it is probably no exaggeration to say that a greater advance has been made in the art and science of medicine in this 75-year period of laboratories than in all previous medical history put together.

Many of you who are not students of the medical sciences are but little interested in medical research and theories of disease. When illness overtakes you, you wish to be cured "safely, quickly and pleasantly". I doubt if physicians can carry out this ideal treatment at present, but the lot of the diseased person today is so immeasurably improved over what it was a hundred years ago that another century may indeed see doctors curing their patients "safely, quickly and pleasantly". This improvement has all come about as a result of the labors of thousands of unknown workers at medical research—some in remote and isolated places—during the past century.

A decade ago, the British Government had occasion to find a formula for delimiting the field of medicine, and adopted the following:

"Medical research deals by no means only with the cure of disease. It deals with the proper development and right use of the human body in all conditions of activity and environment, as well as with its protection from disease and accident, and its repair." This marks out a vast territory wherein lies the whole business of human life on this earth, in all its ramifications from the cradle to the grave. Before the medical research student stands, directly or indirectly, the challenge of the prevention, alleviation and cure of human diseases. The lessons of science show clearly, however, that the investigator having a definite practical goal in view frequently defeats his own ends by his impatience of any but the paths that seem direct and obvious. The cure of disease can only be effective in so far as knowledge guides it, and important discoveries come

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Address delivered at the dedication of the new Medical and Public Health building of the University of North Carolina, Sesqui-Centennial Celebration, December 4, 1939.

generally from the work of those who seek knowledge for its own sake. The man into whose lap the ripe fruit of discovery falls, when the time is propitious, has builded on and profited from countless pieces of research and the long labors of a host of other investigators.

This point of the pursuit of medical research for its own sake, of allowing the investigator to attempt to answer questions in a desire only to satisfy his own curiosity, seems to me to be important in this day and age of practical things. Last year at the opening of The Squibb Institute for Medical Research, Mr. Abraham Flexner gave an address on "The Usefulness of Useless Knowledge" in which he stressed this point. May I quote two sentences:

"The men and women who are today making the largest contribution to human happiness and human health are the quiet workers in laboratories and libraries and who in the pursuit of a devoted career do not pause to ask themselves 'What is the use?'."

"Throughout the whole history of science most of the really great discoveries which had ultimately proved to be beneficial to mankind had been made by men and women who were driven, not by the desire to be useful, but merely by the desire to satisfy their curiosity." The waste in such a program seems enormous, but it is not really so. No one can tell when knowledge acquired by an investigator satisfying his intellectual curiosity in a field of medical research apparently quite remote from practical things may be vital to the health of mankind. No matter how remote and isolated, real research is the life blood of a living medical school.

Permit me to pass now from these general remarks and tell a story of recent medical research which will, I hope, emphasize the importance of such research and illustrate some of the above points. You all know from your reading of newspapers and magazines that in the past three years, a new drug—sulfanilamide—has been used for the treatment of serious bacterial infections. I wonder, however, if all of you realize that the introduction and use of this drug marks, in the opinion of many observers, a period really "epochal in the history of medicine". Personally, I should consider its introduction into medicine as an event to be ranked with the two really great therapeutic discoveries of all medicine—the discovery of anesthesia and that of antiseptic (or aseptic) surgery.

Let me try to relate briefly the story of sulfanilamide; it is absorbing. We must start way back in the year 1904, when Ehrlich and Shiga first showed that a fatal experimental infection of mice caused by a protozoan—a trypanosome—could be completely cured by a single injection of a relatively harmless red dye. Regardless of the fact that other species of infected animals did not respond like mice and that these experiments were of no immediate practical value, a real advance had been made in proving for the first time that a hitherto invariably fatal infection could be cured by a chemical agent. As you all know, six years later Ehrlich announced the discovery of the organic arsenical—Salvarsan—as a cure for syphilis. However, despite the advances which have been made by medical researchers since Ehrlich's time in the chemotherapy of protozoan infections, nothing of any practical importance was developed in the chemotherapy of bacterial infections until within the last three or four years, when drugs containing the sulfonamide group were introduced. This failure was not due to the lack of research along these lines, but probably to the fact that such investigation is still in the stage of haphazard trial and error. As far back, however, as 1911, Morgenroth and Levy had found that a chemical substance related to quinine—ethylhydrocuprein—would cure pneumococcus septicemia in mice; the only instance until a few years ago of the cure of an experimental bacterial infection by a drug. The curative dose was very near the lethal one, however, and this remedy when tried in pneumonia in man was found too toxic to be given in sufficient dosage for effective therapy.

Three years before Morgenroth and Levy's work, in 1908, the chemical compound sulfanilamide was prepared by a chemist, Gelmo, working at the Royal Technical *Hochschule* of Vienna, apparently with the sole desire to satisfy his curiosity. A year later chemists of the I. G. Farbenindustrie at Elberfeld, Germany, prepared azo dyes with sulfonamide and substituted sulfonamide groups and found that they were distinguished by greater fastness to washing and milling than the corresponding sulfonamide-free products. As far as is known no attempt was made at this time to apply these compounds to the control of bacterial infections. As the result of a series of investigations in the laboratories of the I. G. Farbenindustrie, Domagk announced in 1935 that an azo dye containing the sulfonamide group prepared by Mietsch and Klarer would cure an otherwise fatal streptococcus infection in mice. This compound was called Prontosil. Clinical reports attesting to the efficacy of Prontosil in patients with streptococcal infections appeared shortly before and at the same time as Domagk's announcement of his discovery. Workers at the Pasteur Institute late in 1935 suggested that Prontosil was broken down in the body to form sulfanilamide, which was found to be equally as effective as Prontosil. This observation was of great importance, as it demonstrated that a relatively simple organic compound was effective as a chemotherapeutic agent in streptococcus infections.

English investigators in 1936 confirmed, as Long and Bliss did later in America, the fact that both Prontosil and sulfanilamide would cure an otherwise fatal streptococcus infection in mice. In spite of numerous reports from abroad, dating from 1933, on the effect of these drugs in bacterial infections in human beings, it was only with the publication of a paper in June, 1936, by Colebrook and Kenny of Queen Charlotte Square Hospital in London on the remarkable results in child-bed fever that much interest was awakened in English-speaking countries in the new drugs. Investigation of all phases of the new drugs has been increasing at an accelerating rate since this time.

Nearly all of the studies with sulfanilamide (and allied drugs) on experimental bacterial infections have been made on mice. Although supposed at first to be specific against hemolytic streptococcus infection, sulfanilamide (or allied drugs) has now been shown to be curative in experimental mouse infections due to meningococcus, gonococcus, E. typhi and paratyphi B., Clostridium Welchii, some strains of dysentery bacillus and a staphylococcus. Temporary protection only, with delay of death but no recovery, was found for mice infected with S. aertrycke, Frielander's bacillus, P. pseudotuberculosis, and P. septica. Against pneumococcus infections in mice, sulfanilamide is much less effective than it is against streptococcus infection. In regard to other bacterial infections against which sulfanilamide appears to exert a beneficial effect, mention must be made of its inhibitory effect on experimental tuberculosis in the guinea pig, of its remarkable curative effect in certain human urinary tract infections, and of the suggestive results obtained in the treatment of Brucella infections in animals and man. Against infections caused by protozoa as opposed to bacteria, it has been shown that this drug is ineffective in rabbit syphilis, trypanosome infections in mice, and malarial infection in birds. However, it has been found to cure acute malarial infections in monkeys. Against virus infections, sulfanilamide and allied drugs have been generally found to be ineffective, although certain favorable results which have been reported justify further investigations in this field.

Just what do we mean when we say that sulfanilamide cures an otherwise fatal infection in mice? Let me briefly describe an experiment. One hundred mice are given an infection of 200-300 lethal doses of a culture of streptococci. Fifty are placed on finely ground food containing one-half of 1 per cent sulfanilamide, while the other group of fifty are given the same food without sulfanilamide. In twenty-four hours, many of the untreated mice are dead, and the others appear very sick; in forty-eight hours all the untreated mice have died. The mice which have received sulfanilamide look healthy and cannot be told from normal uninfected mice. After three days, treatment is stopped and observation shows that all the treated mice survive. If a much smaller percentage of sulfanilamide is used in the food, a few treated mice may die during the three days of treatment, and many will die later, only a few surviving.

That sulfanilamide is a specific cure in certain infectious diseases in human beings has now been proven by incontrovertible evidence. Streptococcus meningitis, an inflammation of certain lining membranes of the brain, is almost invariably fatal, giving a death rate under all other forms of treatment of over 97 per cent. Enough cases have now been treated with sulfanilamide to show conclusively that the death rate can be reduced to something below 35 per cent; with prompt recognition of the disease and treatment the death rate may be made negligible. In French Nigeria a year or two ago a violent epidemic of meningococcus meningitis occurred. There was not sufficient sulfanilamide available for the French physicians to treat all patients. In those who were not treated with sulfanilamide there was a mortality of 74.6 per cent, whereas in several hundred cases treated with sulfanilamide the mortality was only 10.7 per cent. This kind of evidence, taken together with the numerous other clinical cases of streptococcus infections in which sulfanilamide has been used, shows conclusively that it has a great life-saving value. Besides meningitis, streptococcal infections causing erysipelas, cellulitis, middle ear disease, pneumonia and empyema, septicemia, child-bed fever, and osteomyelitis have been found to be favorably influenced by sulfanilamide. Sore throat, scarlet fever and sinusitis caused by streptococcus have been treated, but results are less certain than in the above diseases. Infections caused by meningococcus, gonococcus (gonorrhea and gonorrheal arthritis), gas bacillus, as well as various urinary tract infections, chancroid, trachoma and lymphopathia venereum, appear to respond very favorably to treatment with this drug. Pneumonia caused by the pneumococcus does not respond as do streptococcal infections. The effect of the drug is fair in undulant fever, and very questionable in typhoid fever and staphylococcal infection, while it appears certain that the common cold is not influenced.

Sulfanilamide has been found from experiments on animals to be a relatively nontoxic drug. However, large doses cause symptoms resembling those seen in poisoning with ethyl alcohol and indicating that the central nervous system is mainly affected.

Although sulfanilamide is a drug possessing remarkable therapeutic properties, it produces at the same time in the human subject a wide range of toxic effects, some of which are minor and of no importance, while others are severe enough to endanger the life of the patient. Of the minor toxic reactions may be mentioned those referable to the central nervous system — dizziness, sometimes severe enough to resemble alcoholic intoxication, headache, nausea, indefinite malaise, cyanosis and acidosis. Symptoms of more importance are fever, skin rashes, and occasionally hepatitis, agranulocytosis, and acute hemolytic anemia. It should not be used indiscriminately, but only in those diseases where sound experimental or clinical research has demonstrated its value, as its administration may be attended with potential danger to the patient. Careful supervision of a patient taking sulfanilamide should reduce to a minimum the danger of its administration.

The drug is readily absorbed and passes into the blood and tissues when given by mouth. It is eliminated from the body in the urine, partly in unchanged form and partly as a conjugated derivative with acetic acid formed in the liver (this acetyl derivative is inactive therapeutically). The drug penetrates all fluids and tissues of the body and is present in these, with the exception of bone and fat, in about the same amount as in blood. This rapid diffusion and penetration of the drug to all parts of the body is undoubtedly one of the factors which make it a successful chemotherapeutic agent.

Numerous drugs allied to sulfanilamide have been tried experimentally and clinically. None of these appear to be as good or better than sulfanilamide, with the exception of sulfapyridine. This drug has proven about as effective in pneumococcus pneumonia and meningitis as is sulfanilamide in hemolytic streptococcus infections. It is also the most efficient drug known at present for staphylococcal infections.

What I have said above about the effect of sulfapyridine in pneumococcal infections does not begin to do justice to the miraculous effects of the drug. The serum treatment of pneumonia which has been in use for many years past has proven very effective, but it is limited in its use and is extremely expensive to give. Sulfapyridine has a much wider application. Statistical results have been accumulated during the past year in sufficient numbers to demonstrate its value beyond question, but one who has seen pneumonia patients treated with this drug does not need statistics to be convinced of its value. I can recall clearly one of the first cases which was treated with the sodium salt of sulfapyridine, and the dramatic results obtained. A woman of sixty-two years was seriously ill with pneumonia and at a stage where competent clinicians felt that death was only a matter of hours. Two intravenous injections of the sodium salt of sulfapyridine were given. The next morning the patient's temperature was normal and she appeared well. This sharp fall of temperature in a patient seriously ill, frequently occurring in twenty-four hours after the administration of sulfapyridine and accompanied by signs that a very sick individual has become a well one, is one of the dramatic results of modern medicine. Sulfapyridine can be given by mouth just like sulfanilamide, and it is only in emergencies that intravenous injection of the sodium salt is indicated. On the whole sulfapyridine appears to be more toxic than sulfanilamide. As compared with sulfanilamide it has many disadvantages, but is the drug of choice at present for use in pneumococcus infections, although my own feeling is that it is by no means the final answer to the problem of the chemotherapy of pneumonia.

No satisfactory explanation of the mode of action of sulfanilamide in curing bacterial infections has as yet been attained. In a consideration of this problem three factors are involved: the drug, the infecting organism, and the host. The first step in any explanation is to decide to what extent the reaction between drug and bacteria is sufficient and to what extent the defense mechanism of the host plays a role in changing the drug or in removing the organism. /At present, the balance of evidence would seem to indicate that sulfanilamide affects the invading bacteria in the sense of exerting a bacteriostatic or bactericidal action which is not sufficient to effect sterilization without the cooperation of the defense mechanism of the host.

This question of the mechanism of action of these new drugs is a very important one. If it could be solved the search for new drugs better than those we already have for treating certain infections and also for drugs to control infections not susceptible to treatment would be put on a firm scientific basis, independent of the more or less haphazard methods used at present. This is where medical research in its broadest sense comes in. One needs all the information possible about the chemical behavior of these drugs, about their effect upon the normal and abnormal human organism, about their effect upon different bacteria under various conditions, as well as information about the response of different strains or groups of bacteria of the same genera and detailed information about the intimate metabolic habits of various bacteria. Here research, no matter how remote and isolated, will be needed to fill in and complete the picture and enable us to use these new weapons against infectious diseases with the full knowledge which should be necessary for their truly scientific and intelligent use.

In conclusion, may I express the hope that the use of this fine new building which is being dedicated today may stimulate and expand the medical research with which the name of the Medical School of the University of North Carolina has always been associated.

URGENT SURGERY UPON INFANTS UNDER ONE YEAR OF AGE

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By the term "urgent surgery" I refer to those cases which are ordinarily called emergency, and also that group demanding imperative surgery in which a little more time, possibly two or three days, may be used for study and preparation.

Anatomically, an infant is a miniature adult, but physiologically and surgically such is not the case. He who operates upon one of these little ones without taking that fact into consideration is subjecting his patient to greater unnecessary risk than he who operates upon the goiter of a patient with acute hyperthyroidism without any more preparation or safeguard than is given to one with a simple non-toxic goiter. Mature judgment, experience in surgical technique, and speed without haste are probably more essential to success in surgery upon infants than in any other field of surgery.

The occasional operator should not attempt major surgery upon infants. The advice of a pediatrician or an internist especially interested in pediatrics is indispensable. It has been my custom, whenever possible, to place the major responsibility upon the pediatrician up to the time the infant comes to the operating room and again from the moment he leaves the table. During the preoperative and post-operative periods, should there be a difference of opinion between the pediatrician and the surgeon, the opinion of the former should take precedence.

Among the important pre-operative measures to be stressed is restoration of water balance by mouth, by hypodermoclysis, or by intraperitoneal or intravenous infusions,

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using plain water, salt and glucose solution, or blood as indicated. Rapid dehydration and loss of weight from vomiting occur so commonly that its correction is probably the most important pre-operative indication. Where there is no vomiting or other contraindication to food, nursing may be continued to within four hours of the operation. Morphia is contraindicated before operation, but small doses of atropine are usually, but not routinely, given.

Local anesthesia or ether by the open drop method have been most satisfactory to me. The occasional anesthetist, like the occasional operator, has no place in the handling of these desperately ill infants, unless a trained anesthetist is not available. Too frequently on the table a patient is allowed to become chilled from insufficient covering or from a cool operating room, or is loaded down with blankets so that there is an enormous loss of fluids from perspiration. While this is harmful to an adult, it may be disastrous to an infant.

Gentleness and precision, desirable in any class of surgery, are almost a *sine qua non* in dealing with these frail creatures. Rough and ready surgery has no place here. The necessity for careful hemostasis and for the use of very fine ligatures and sutures is obvious. Following operation, the preservation of water balance, prevention of acidosis, careful maintenance of the body temperature, and relief of distention are of such vital importance as to demand the closest attention of the surgeon or pediatrician, and should not be left to a nurse, regardless of her competence. Needless to say, the utmost care must be used to prevent infection, and should it occur, to detect and treat it in its incipiency. Infants react poorly to pyogenic infections. One day's absorption from a pyogenic infection in an infant may prove more harmful than three days' absorption of a similar infection in an adult.

In the brief time allotted me I will simply cite a few case histories illustrative of the conditions which I wish to discuss. Surgery of the ear, nose and throat will not be included, as my experience in those fields has been extremely limited.

Intussusception

Baby K., age three months, male, was admitted with the history that he had been vomiting for about thirty hours and had apparently severe pain in the abdomen. The mother stated that the abdomen had been greatly swollen for at least twenty-four hours, and that the baby had been passing blood. Examination showed temperature 101.5 (rectal), pulse 128, respiration 34. Heart and lungs were normal. The abdomen was markedly distended, and just to the right of the umbilicus a fullness could be seen, and a mass the size of a lemon could be felt. The mass was hard and appeared fixed. On rectal examination it could be felt, and when the finger was withdrawn there was a slight blood-tinged discharge. Under ether by the open drop method a right rectus incision was made. The ileum was found invaginated into the transverse colon, and was very edematous. The first part of the reduction was easy, but it was with considerable difficulty that the last few inches were reduced. The patient left the hospital in one week apparently well.

Baby F., age seven months, male, was admitted with the history that he had been having abdominal pain for thirty-six hours. The mother stated that she had given cathartics, but had been unable to get a movement from the bowel except blood. Temperature was 104.4 (rectal), the pulse was so rapid as to be recorded with a (?), respiration was 60. The patient appeared actually to be moribund. The abdomen was so greatly distended and rigid that it was impossible to say whether or not there was a mass. Our first reaction was that it would be useless to operate and that to do so would tend to bring surgery into disrepute. However, after two hours' preparation, during which we partly restored the water balance and lessened the acidosis, the baby seemed so much better that we decided to operate. A high mid-line incision was made, and the ileum was found invaginated into the descending colon. By gentle pressure it was easily reduced. The abdomen was filled with salt solution and rapidly closed. The patient was on the table twenty minutes. He made an uneventful recovery and left the hospital in nine days.

This case is cited not to advertise the skil of the surgeon but to emphasize how desperately ill these little ones can become in short time, and yet respond rapidly to prope treatment. A seven months old baby, ill fo thirty-six hours, abused with cathartics, dehydrated from loss of water and blood, wa apparently so near gone that the wisdom o operating was doubtful. Yet after two hours of preparation he was able to withstand a general anesthetic and an abdominal operation and to make a complete recovery.

Intussusception is probably the most frequent surgical catastrophe in the abdomen of an infant. At least two-thirds of all cases occur under one year of age, and the majority occur from about the fifth to the eighth month. It is several times more frequent in the male, and often seems to appear out of a clear sky in apparently healthy babies. There are several varieties, but the most common is the invagination of the ileum, cecum and appendix into the large bowel. The attacks usually appear suddenly and are manifested by severe abdominal pain. In fact the pain is so clear-cut, sudden, and acute, that it has been compared to the onset of a ruptured ectopic pregnancy. The pain passes off quickly and the baby appears to be comfortable. Soon, however, the pain recurs followed by vomiting, distention and tenesmus. Usually, but not always, blood is mixed with the stools, but later there is only a blood-stained mucous discharge from the bowel. Diagnosis can be made almost from the history alone, even when there is no bleeding from the bowel. Usually an abdominal tumor soon appears on the right side, in the center, or even on the extreme left. The finger in the rectum may palpate a mass, but often when no mass is felt and even when there has been no previous bleeding from the bowels, there will be blood on the finger when it is withdrawn. In the rare case when a definite diagnosis of intussusception cannot be made, it is nevertheless evident that an acute surgical condition exists which demands operation. Unfortunately, in the vast majority of cases, when first seen by the surgeon, the obstruction is well advanced and the diagnosis only too obvious.

In former years efforts were made to reduce the obstruction by fluids introduced into the rectum. This I mention only to condemn. It is too uncertain, wastes valuable time and adds to the shock. The x-ray is unnecessary. At operation, reduction is usually easy if the case is gotten within the first eighteen hours. In the late cases reduction down to the last few inches is seldom difficult, but complete reduction by manipulation alone is sometimes impossible. To leave the obstruction incompletely reduced is dangerous. To resect is almost invariably fatal. Probably the best solution is to incise the constricting band vertically just as you would cut the muscle of the pylorus in congenital stenosis, except that in these cases you cut completely into the lumen of the bowel, reduce the obstruction and then suture the incision in the gut with the finest silk and close the abdomen without drainage. That procedure is not as difficult or dangerous as it may seem, and has served me well in several cases.

As a rule acute intussusception once reduced does not recur. However, I recall one case in which I reduced by operation a simple intussusception in a baby eight months old. Less than a year later, while I was out of town, the intussusception recurred and another surgeon operated. About six months later it again recurred, and then at operation I tacked the terminal ileum to the side of the cecum. The patient is now over twenty years old and has had no further trouble. I mention this case merely as a matter of interest, and not to recommend that the ileum be fixed by suture routinely.

Meckel's Diverticulum

Baby B., age three months, female, was admitted to the hospital with the history that twenty-four hours previously she developed severe abdominal pain which would come and go, accompanied by marked vomiting. These symptoms increased in severity up to the time of admission. The mother stated that the abdomen was greatly swollen and that there had been neither diarrhea or marked constipation. The temperature was 102°, pulse 120, respiration 30. Lungs were clear and heart normal except for the rapidity. The abdomen was uniformly and greatly distended—the typical drum-like appearance. It did not seem to be especially tender. No mass was felt on abdominal or rectal examination. A right rectus incision was made. The appendix was normal. A Meckel's diverticulum was found pressing on and constricting a loop of the small bowel. The diverticulum was removed almost flush with the ileum, and the opening in the intestine sutured longitudinally with a fine silk suture. The patient made an uneventful recovery and left the hospital in one week.

Statistics from autopsies indicate that Meckel's diverticulum occurs in possibly 3 per cent of individuals, yet I have heard surgeons of large experience state that they rarely see one. The late Sir William Osler was in the habit of asking his students why it was that so frequently a physician in practice would state that he seldom saw such and such a sign in such and such a disease, when the text-books stated it was quite common. After the students had made several unsuccessful stabs at a reply, Dr. Osler would answer, "It is because it was not looked for carefully." Obviously I do not recommend routine search for a Meckel's diverticulum when the abdomen of an infant is opened for some other cause. However, I do recommend it as a routine procedure in adults when feasible, and it is surprising how many times the search will be rewarded.

Congenital Bands

Baby F., age five weeks, male, was seen at his home by a very competent physician shortly after the onset of vomiting. Following consultation with a pediatrician the baby was brought at once to the hospital with a diagnosis of "something gone wrong in the abdomen which demands a surgeon". A midline incision revealed a loop of ileum bound down tightly by a band arising from the cecum and extending to the parietal peritoneum. This band was severed and the bowel found to be in good condition. Recovery was uneventful.

Strictures causing partial or complete obstruction, blind pouches and other congenital abnormalities of the small bowel, while not frequent, may occur in the practice of any surgeon. Usually they become manifest in the first few weeks of life. Rarely is the correct diagnosis made, nor is that necessary, providing the need for exploration is recognized promptly.

Congenital Pyloric Stenosis

Baby A. B., age seven weeks, female, admitted to the hospital with a history of vomiting and loss of weight. The presence of a typical olive-shaped mass in the region of the pylorus gave the diagnosis. After the usual examination and pre-operative preparation by a pediatrician, a high right rectus incision was made under ether. The liver was retracted. A Fredet-Rammstedt operation was performed. The patient left the table in good condition and was returned to the pediatrician for post-operative care. She made an uneventful recovery.

Baby F. P., age three weeks, female, was admitted to the hospital from a neighboring town in an extremely emaciated condition. The history was that various forms of nourishment had been tried which merely increased the vomiting. The true diagnosis had not been suspected, although when the patient was admitted to the hospital, a small mass could be felt just below the right costal margin near the mid-line. Under the care of a pediatrician the baby improved rapidly, so that in about thirty-six hours operation was advised. Because the baby was improving under treatment, the parents felt that operation was unnecessary and took her home to continue the treatment. About ten days later she was brought back in a worse condition than at her previous admission. Again the pediatrician attempted to get her in shape for operation, but with only fair success. Under local anesthesia a high right rectus incision was made, the liver retracted and the stomach found to be tremendously dilated. A Fredet-Rammstedt operation was done with excellent exposure of the mucosa. A few whiffs of ether was then given to facilitate closure. The patient left the table in fair condition but died forty-eight hours later.

These two cases are cited for comparison. In the former the diagnosis was made promptly, and after the usual preliminary preparation a successful operation was performed with very little danger. In the latter the baby was not brought to the hospital until she was extremely emaciated and dehydrated. Even when the condition was improved to the point where operation seemed justified it was refused.

The cases of simple pylorospasm recover under medical treatment, while in the cases of true stenosis attempted relief by medical means causes a loss of valuable time. Until recently some pediatricians believed that since the medical treatment, consisting largely of gastric lavage followed by feedings through the catheter, together with atropine or phenobarbital, would cure simple pylorospasm, it would also cure or relieve some of the cases of true stenosis. Most pediatricians now agree that when simple pylorospasm has been ruled out, and a definite diagnosis of true obstruction made, operation should be resorted to after proper preparation. Therefore the important point is the differentiation between the two conditions. In both there is projectile vomiting with definite peristaltic waves visible over the epigastrium; although in the true stenosis the amount of vomitus is somewhat more and the peristalsis more active. However, the difference in degree of those two symptoms is not sufficient to be relied on entirely in differential diagnosis.

In pylorospasm there is only slight loss of weight, while in true obstruction the loss is usually marked. In pylorospasm the stools are practically normal, while in true pyloric obstruction they are scanty and composed largely of mucus. In pylorospasm obviously no tumor can be felt, while in true obstruction a tumor can usually be felt, and if so, is pathognomonic. Usually the diagnosis of congenital pyloric stenosis can be made without the x-ray. If there be doubt, x-ray is helpful by showing the contrast medium present in the stomach after six to eight hours in the true obstructive cases in spite of vomiting, whereas in that length of time the stomach will be empty if there be no organic obstruction. Needless to say the stomach should be washed out immediately prior to operation.

Acute Appendicitis

Although acute appendicitis is seen frequently in children under three years of age, I have seen no case under one year.

Imperforate Anus and Rectum

The records of the out-patient department of the New York Lying In Hospital showed that imperforate anus occurred 27 times in 93,000 births, or one in 3,500. Vernon David states that various authors give the incidence of malformation of the rectum and anus between 1 in 5,000 to 1 in 10,000.

Baby J. S., male, was at birth apparently normal except that there was no anus, and no depression to indicate where it should have been. When he was seventeen hours old, under light ether by the open drop method, incision was made through the perineum back to the coccyx. The loose tissues were dissected upward for a distance of between two and three inches, when the palpating finger detected an area of lessened resistance, and, on slightly more careful dissection, the blind pouch of the rectum was seen. This was dissected loose and opened, and about two ounces of meconium escaped. The mucous membrane was then sutured to the skin at a location where we thought the anus should have been. Although the operation lasted thirty minutes the little patient showed practically no signs of shock and made an excellent recovery. For one year after the operation the rectum was dilated periodically by inserting the little finger, index finger and the thumb at each treatment. The family then returned to their home in Cuba. Nine years later the mother gave me a verbal report that the child was healthy in every way, and that so far as she knew the bowel function and sphincter control were normal.

Obviously no one surgeon sees a sufficient number of congenital malformations of the rectum to draw any definite conclusions. It is only by a number reporting and pooling their cases that any helpful information can be obtained.

Benign Tumors of the Liver

Baby E. W., age four months, male, was brought from a neighboring town because of the fact that the abdomen had been enlarging rather rapidly. On examination the baby seemed normal except that the abdomen was distended tremendously by a mass which on percussion gave dullness throughout the whole abdomen except for slight tympany in each flank. A mid-line incision was made. A tumor which by actual weight was a trifle over three pounds was attached to the under surface of the liver by a small pedicle. The pedicle was severed between hemostats and the tumor easily removed. The rest of the abdomen was normal. The patient was on the table only a few minutes, and after the operation was in fair condition. On the third day he began to grow weaker and died on the fourth day. The specimen was sent to Dr. Winternitz, Professor of Pathology at Yale, who made a diagnosis of myxoma of the liver. Christopher in his recent book makes the following statement: "Benign tumors of the liver are of more interest to the pathologist than to the surgeon. Lipoma, fibroma and myoma have been reported but are extremely rare, and adenoma occurs infrequently." He does not mention myxoma, nor does the system of surgery edited by Dean Lewis mention benign tumors of the liver. This case is reported as one of extreme interest because of its rarity.

Irreducible and Strangulated Inguinal Hernias

Baby M., age three months, female, was admitted with the history that since birth the mother had noticed a swelling in the baby's groin which would come and go. For the past eight hours the mass had been protruding and could not be reduced. Examination showed an apparently healthy child with a right inguinal hernia the size of a hickory nut and extremely tense. Under light ether a very tight ring was incised. The sac was opened and the hernia reduced. A high ligation of the sac was done and the wound closed.

Baby R. B., age five weeks, male. History was that on a few occasions since birth the mother had noticed a slight protrusion in the right groin. About four hours before admission it was noticed that this mass had returned, was quite hard and could not be reduced. Examination showed a very tense mass the size of a large olive protruding from the right inguinal canal. Under ether an incision was made and a knuckle of bowel found tightly constricted. This was reduced, the sac dissected out and ligated high. The skin was then closed and a circumcision done.

From the viewpoint of the surgeon, hernias in infants may be placed in three groups:

1. Those with symptoms of strangulation. These demand immediate operation. Unlike the dehydrated cases of intussusception and pyloric stenosis, they are usually in good condition and can be operated upon immediately after admission. These are real emergencies and a delay of a few hours may be disastrous.

2. Those cases in which the hernia is irreducible but without evidence of strangulation. These are certainly urgent, and really should be classed as emergencies. While there may be no indication of beginning strangulation, it cannot be excluded definitely. Since the infant is in relatively good physical condition, there is nothing to be gained by delay.

3. Those cases where the ring is large and the hernia protruding most of the time in spite of mechanical support. These are frequently bilateral. They could hardly be classed as urgent, but the results of operation are so satisfactory that I feel we are justified in assuming the slight risk, rather than permit the ring to become more dilated and the infant to be handicapped constantly by the protruding mass.

At operation a high ligation of the sac is all that is necessary. To overlap or even to suture the fascia is unnecessary, and increases the danger of infection. Transplantation of the cord as in adults would be the height of folly. If there be an accompanying phimosis, circumcision should be done.

I had selected from my records for discussion cases of empyema, certain types of meningocele, tumor of the kidney, abdominal enlargement from hydronephrosis and various fractures including those occurring at birth, but time would not permit. The object of this paper is to emphasize two cardinal points:

1. That from a surgical standpoint, the infant is not a miniature adult, and what may be considered fair or even good surgery upon an adult may be poor or even bad surgery upon an infant.

2. That many of these desperately ill infants may, by the aid of a competent pediatrician, become reasonably safe operative risks, and precious lives may be saved.

THE PREVENTION AND TREATMENT OF PELVIC FLOOR INJURIES

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One of our prime aims in obstetric care is to ensure that our patient be left with no permanent disability of any kind after delivery. One of the disabilities to which she is most liable is a lack of proper support of the pelvic organs resulting from overstretching and laceration of tissues, sustained during the course of labor. The object of my short talk is to discuss how these injuries occur, how they may be prevented, and how they may be repaired when they are present.

The discussion will have to be prefaced by a brief resume of the facts regarding the normal support of the pelvic organs. The maintenance of the pelvic organs in their normal position is provided for in two ways—one by what may be called mesenteric supports and the other by fascial and muscle sheaths and diaphragms. Thus the uterus is kept at its normal plane in the pelvis by being embedded at the level of the isthmus and the supravaginal cervix in a matrix of con-

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nective tissue, which is specially condensed at the bases of the broad ligaments along the line of the uterine vessels as they run to and from the uterus to their origin and termination in the internal iliac artery and vein near the lateral pelvic wall. This condensation of fibrous tissue round the uterine vessels constitutes the so-called transverse cervical or cardinal ligament on each side and is the part of the mesentery of the uterus which plays the greatest part in keeping it at its normal level in the pelvis. The rest of the mesentery is the upper part of the broad ligaments with the ovarian vessels, and, secondarily, the round ligaments and the utero-sacral ligaments. All of these latter play a part in the maintenance of the position of the fundus as regards its anteversion and retroversion, but have comparatively little part in the maintenance of normal level.

One of the most apt descriptions of uterine supports is that given by Chipman, who likens the uterus to a person seated in a swing. The transverse cervical ligaments on each side at the bases of the broad ligaments constitute the seat of the swing on which the isthmus of the uterus sits. The cervix hangs free in the vagina like the swinger's legs, while the upper part of the broad ligaments and the round ligaments are like the ropes of the swing which the swinger holds to keep his forward and backward balance.

But if the uterus had no further supports than these it would be pushed downward by intra-abdominal pressure. It requires in addition to be buttressed from below, and this buttress is supplied by the pelvic floor, made up of muscle and various fascial layers and sheaths surrounding the vagina, the rectum, and the bladder.

This pelvic floor or diaphragm is so arranged that there is no continuous gap in the direct line of intra-abdominal pressure. Thus the axis of the vaginal tube is practically at right angles to that of the uterus when the latter is in normal anteversion, so that any tendency for the uterus to be pushed down into the vagina is counteracted by the resistance of the posterior vaginal wall supported by the levator muscles and their fasciae.

Proper pelvic floor support is dependent upon the maintenance of the normal direction of the vaginal axis, and this is dependent on the integrity of the perineum and of the levator muscles and their fasciae. When the vaginal axis comes to be more nearly vertical than horizontal, the anterior vaginal wall, which has little support of its own, no longer has a firm shelf on which to rest, and it begins to sag downwards and backwards, carrying the bladder with it as a cystocele. The cervix is dragged down, and if the uterus happens to be retroverted its axis is now in a straight line with that of the vagina, and further descensus takes place. With cardinal ligaments of normal tone this descent of the uterus may take place slowly, and with intact pubo-cervical fascia the development of the cystocele may take time; but both will ultimately occur in some degree. When proper supports of these organs are also weakened, the development of the prolapse will take place more rapidly.

The rectum is supported primarily by its fascia propria and secondarily by the levator muscles and fasciae. If the latter are injured and not repaired, extra strain is thrown upon the former and a slow development of rectocele will occur. If both levator and fascia propria are injured, the rectocele will develop more rapidly and attain a larger size.

Good levator and perineal support—which means a normal axis of the vagina—together with a normal anteversion of the uterus will ensure a maintenance of the latter at a fair level in the pelvis, even though its transverse cervical ligaments are somewhat relaxed, and will prevent the development of a rectocele and of any large cystocele even if the fascia propria of the bladder has been injured. At the time of delivery there is never direct evidence of injury to the transverse cervical ligaments or to the bladder fascia; and if there were, there is no technique known for their immediate repair.

On the other hand, tearing and injury to the levator muscles, the fascia propria of the rectum, and the perineal body and central raphe of the perineum are always evident when present, and repair can be done at the time. The efficiency of this repair depends upon the correct approximation of the severed structures and the maintenance of this approximation during the healing process.

This is not always easy in the ordinary pelvic floor laceration. Let us try to visualize just what the common lesion is. The ordinary tear begins in the postero-lateral sulcus of the vagina on one or both sides. The point in the long axis of the vagina at which the tear begins varies. The higher this point is, the more extensive will be the damage to the levator structures. In the spontaneous delivery or in a forceps extraction there is always an indication of when and where the tear begins. It is evidenced by that little trickle of blood which appears after a pain has passed off, or when the traction on the forceps is released. Up to that time there has been no bleeding. When bleeding appears we know that a laceration has begun at the level at which the head is at the time. As the head descends naturally or by forceps traction, the tear extends down through the postero-lateral vaginal wall and into the lateral pelvic floor supports towards the vaginal orifice, becoming gradually more central, so that when it reaches the vaginal orifice it is in the middle line—and it is in this line that the perineum tears. If tears have begun in both lateral sulci the two meet close to the vaginal orifice, and there is only one almost central tear in the perineum. Usually in bilateral tears the apex of the one is higher than that of the other.

It is not easy to effect a perfect repair of such a lesion, for there has been a tearing across of muscle fibres and of fascia on each side, and a great deal of retraction occurs. The large mass of the muscle retracts outwards, leaving only a thin, rather feeble portion towards the middle on each side. Sutures, even when properly placed, are apt to cut out, with the result that, even with perfect healing of the skin perineum, a permanent relaxation of the pelvic floor remains with subsequent prolapse.

Consider now the so-called third degree tear. This usually occurs in the course of the delivery of the aftercoming head in a breech, or in a precipitate delivery of the head through the vulva, where there has been no previous warning that laceration was beginning. This tear begins near the vaginal orifice and is practically dead center, so that as it goes through the perineum it extends into the anal canal and divides the anal sphincter. I have seen patients years after such an unrepaired laceration, and although they have all the discomforts of lost sphincter control they have had no prolapse of any kind. The reason is that this is a superficial tear of the central raphe of the perineum; the levator muscles and fasciae on each side remain intact, so that they do not retract but continue to give support.

All this leads up to the point I want to make—namely, that a modified central—or what may be called a medio-lateral episiotomy, is preferable to the ordinary spontaneous laceration and to the so-called lateral episiotomy.

Let me describe just how a medio-lateral episiotomy is done on my service in the Sloane Hospital for Women. The procedure is carried out when the head or the breech is beginning to distend the perineum. It should be done before laceration of the vagina has begun, as evidenced by the little trickle of blood which I mentioned. If this appears, the incision ought to be made with the next pain, irrespective of the degree of perineal distension. If forceps extraction is indicated, the forceps are applied and gentle traction is made to distend the perineum. With the perineum distended and tightened, either at the acme of the pain in a spontaneous delivery, or by gentle forceps traction, an incision is made with the ordinary curved Mayo scissors, the scissors being placed with one blade inside the vagina and one outside on the perineum. Care must be taken to keep the handles of the scissors in the line of the central raphe of the perineum; otherwise a shelving cut will be made, and this must be avoided. The curve of the scissors is sufficient to carry the lower end of the incision to one side of the anal orifice and the sphincter. In the ordinary case the incision does not extend as far as the level of the anus.

A study of a dissection of the pelvic floor will show just what structures are cut. It will be seen that the incision goes through the center of the triangular ligament, and, in its deeper part, through the line where the two levator muscles and their fasciae merge in the middle line. If it reaches nearer the level of the anus, it is still between the transverse perinei muscles on each side, avoiding the sphincter, so that should extension occur the latter will not be injured and the anal canal will not be entered.

In delivering the head the same care must be exercised as in delivery through an intact perineum. Flexion of the head must be maintained until all of the occipital region is born, and extension allowed only as the rest of the head slips out. Too rapid extension may result in further laceration.

Repair of the Incision

It is our custom to repair the incision before the birth of the placenta. The reasons for this are that the patient is still under anesthesia; that we have time on our hands after seeing that the baby is all right; and that we have never seen any injury to the repair resulting from the delivery of the placenta. If at any time bleeding should indicate that the placenta is separating, it is delivered, and the repair then continued.

A strip of sterile gauze or a sterile gauze wipe with string attached is placed in the vagina above the apex of the incision to keep the field clear of blood. A pair of Allis clamps are placed on each side at the muco-cutaneous junction, and used as retractors. Beginning at the apex in the posterior vaginal wall, a running suture of No. 1 chromic catgut approximates the cut edges to just beyond the skin margin. This suture is not tied, but is left long and is continued at a later stage as a subcuticular stitch to approximate the skin edges. This stitch in the vaginal wall may be through and through, or submucous from the beginning.

With the vaginal tube thus restored down to the skin of the perineum, the severed deeper structures are approximated by interrupted figure of eight sutures of chromic catgut No. 2. As there is very little lateral retraction of tissues, the sutures are easily placed, and they do not tend to cut out.

A running suture of No. 2 or No. 1 chromic, beginning anteriorly, approximates the superficial fascia. At the lower end of the incision the needle brings the suture out on the skin surface.

The running suture in the vaginal wall is now continued down as a subcuticular suture approximating the skin edges, and is brought out on the skin surface at the lower end opposite the fascial stitch. These two sutures are then tied together over the lower end of the incision.

As an additional safeguard we may place a single stitch of silkworm gut near the muco-cutaneous junction, and sometimes one, or even two more along the length of the skin wound. In the event of a break-down of the catgut approximation these may obviate the necessity for a secondary repair. The method of closure may, of course, be varied in many ways. The method I describe has given us the best results. It is the method used by my predecessor in the Sloane Hospital, the late Dr. William E. Studdiford, and carried on and modified by his pupils—notably by William M. Findley.

On a service with interns coming and going, breaks of established technique are apt to occur. In going over our results for the year 1937 we found that we had had an unusual number of complete or partial break-downs of repaired episiotomies. An investigation brought out the fact that the technique just detailed had not always been accurately followed. The matter was taken in hand and fresh instruction given, with the result that 1938 showed a decided improvement. The figures for the two years are as follows:

1937	
Cases of 2nd degree laceration and episiotomy	584
Cases in which some break-down occurred	19, or 3.3%
Cases requiring secondary repair	9, or 1.6%
1938	
Cases of 2nd degree laceration or episiotomy	706
Cases in which some break-down occurred	11, or 1.6%
Cases requiring secondary repair	2, or 0.3%

When a break-down occurs, it usually means a longer hospitalization of the patient. In 1937 there was a total of 177 extra hospital days care given for this reason, while in 1938 there were only 50 days. This was a saving of 127 hospital days, which at $4 a day meant a saving to the hospital of $508. (Our ward patients are taken care of on a flat rate, irrespective of the time they may have to stay on the obstetrical service.)

This experience brought home to us anew the necessity for constant and close supervision of every detail of what we regard as established procedures.

The test of any procedure is in the follow-up of the patients. I can say, unhesitatingly, that the ultimate results as regards pelvic floor support are better with a median episiotomy and repair, as described, than after spontaneous laceration with repair, and even after delivery without gross laceration.

Our experience is that those patients who have had median episiotomy and repair require the same procedure in subsequent deliveries, whereas many who have had spontaneous lacerations and repair deliver subsequently without further laceration. This may sound like a left-handed argument for episiotomy but it really is not; for it means that when properly done the procedure restores the patient to her original nulliparous condition so far as her pelvic floor supports are concerned.

But episiotomy does still more than that. It saves the child from injury by shortening the period during which the head pounds on the perineum; and, by allowing the head to slip back at the outlet, it takes the strain off the fascial structures anteriorly — notably the fascia propria of the bladder—and minimizes the risk of cystocele developing.

With a perfect result so far as the pelvic floor is concerned we have still another responsibility to our patient—namely, to see to it that the uterus during its involution returns to its normal anteverted position. Up to the tenth or twelfth day of the puerperium it is prevented from retroverting because it is supported posteriorly by the lumbar spine and the promontory of the sacrum. After this, as it descends below the pelvic brim, it is quite apt to tilt backwards. It should be a rule, therefore, to examine bimanually every patient on the twelfth or fourteenth day of the puerperium. If the uterus is found to be retroverted, it can then be very easily replaced and held in place with a pessary, which is left in until involution is complete at the end of six weeks. We further make it a rule that every patient be examined bimanually at the end of the fourth week of the puerperium, as we not infrequently find that a uterus, in perfect position at the end of the second week, has become retroverted by the fourth. If such be the case, the uterus is replaced and a pessary inserted.

If the uterus is thus kept anteverted all strain is taken off its fascial and ligamentous supports. These will involute normally, and so retain it in proper position when the pessary is removed. If replacement and retention are not effected before the end of the six-week period of involution, the retroversion will be permanent. We have found the use of a pessary in this way much more certain in its results that the use of the knee-chest position, or of exercises like the monkey crawl.

It has been objected that there may be risk of infection in introducing a foreign body into the vagina so early. All I can say is that over a period of many years I have never seen infection occur.

Another very valid objection is that in introducing the pessary we would cause a great deal of pain and might disrupt a recently repaired pelvic floor. This objection is done away with by the pessary devised by my colleague, Dr. William M. Findley. It is an ordinary Smith-Hodge hard rubber pessary, with a small section of soft rubber let into each pole. With this device the pessary can be folded on itself and be introduced through the narrowest vaginal orifice without pain and without injury to any recent wound. When in the vagina it expands to its normal shape. I commend this pessary to you not only for your puerperal patients, but for every case that requires pessary treatment.

A TUBERCULOSIS CASE-FINDING PROGRAM IN A WOMAN'S COLLEGE

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When one looks at so long and complicated a title as that which has been assigned to me, it makes one feel that emphasis put on a word here or there might make this very complex subject more interesting and less diffuse. At first glance the most important word in this subject might seem to be "Woman's", for certainly it is not hard to see that the tuberculosis problem in a woman's college is at once more vital and more acute, because of increased susceptibility of the students, and also more difficult, because of the nervous reactions of the adolescent girl. These factors, and particularly the second, I will discuss briefly in this paper. But on second thought I find my eye and mind clinging to the phrase "Case Finding". Surely here is the crucial point. How shall we find tuberculosis where it exists hidden and obscure? How bring it out into the open before the signs are so clear that "he who runs may read"—and weep?

It is not necessary, before this audience, to belabor the point which has time and again been emphasized to college presidents and deans, namely that if early cases of tuberculosis are not sought with diligence, care, and by most skillful and modern methods, they will not be found. However, a brief resume of the data submitted by the Tuberculosis

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Committee of the American Student Health Association will serve to give added proof to a maxim which we all accept.

This committee, which under the chairmanship, first of Dr. Lee Ferguson of Western Reserve University, and later of Dr. Charles E. Lyght of Carleton College, has done yeoman service in stimulating college health departments and college administrators to an appreciation of their duties and opportunities in tuberculosis work, published its first report in December, 1933. In that report only twenty-five colleges had been questioned as to their tuberculosis case-finding programs, and these were supposedly leaders in college health work. Of the twenty-five, only fourteen made any report, and of these only eleven gave data accurate enough to be serviceable as to their procedures and findings.

On the basis of the reports from these eleven institutions, however, the same comparisons can be made as those on the 1938 report of the committee, in which 233 colleges co-operated. It was found that seven of the eleven institutions reporting in 1933 had what might be termed a fairly adequate tuberculosis case-finding program, by which is meant that these schools did not depend entirely on symptoms or even on physical signs for their diagnosis, but went after the cases with tuberculin testing, x-ray, or both, while four had no such definite machinery set up for this work. In the seven schools with an adequate program 262 cases of adult type, infiltrating pulmonary tuberculosis were found in a total student population of 38,932. This is a rate of .67 per cent. In the four schools having no program, on the other hand, only eleven cases were found in a student population of 15,374, or a case rate of .07 per cent. In other words, almost ten times as many cases, proportionately, of infiltrating pulmonary tuberculosis were found in institutions which were alive to the necessity of seeking for them.

In 1934 the same fourteen institutions were asked for data as in 1933, with a case rate of .59 per cent for those with an active program as against .14 per cent for those without such a program.

In 1935 the figures were .57 per cent against .12 per cent, with many more colleges responding; in 1936 .42 per cent against .18 per cent; in 1937 .34 per cent against .11 per cent; and in 1938 .22 per cent against .01 per cent, with a student population of 261,949 in the institutions where an active search for tuberculosis was going on.

Of course these figures indicate other things beside the incontrovertible fact which they show so clearly—namely, that through the years of this study, from three to twenty times as much infiltrating pulmonary tuberculosis has been found among college students subjected to a real case finding program as in those among whom no such effort has been made. They also indicate a gradual and steady decline in the amount of tuberculosis present in college students, and an almost equally encouraging increase in the number of institutions which are alive to the problem and actively engaged in its solution.

Our own experience with a case finding program at the Woman's College of the University of North Carolina began in the spring of 1932, when under the enthusiastic leadership of Dr. Anna M. Gove, then head of the college health department, and with the active assistance and inspiration of Dr. P. P. McCain of the North Carolina Sanatorium, the first tuberculosis clinic was launched. At that time it was impossible to get the full co-operation of students because the idea was so new, and pioneer educational work had to be done. However, in spite of the fact that we were successful in getting less than half of our positive tuberculin reactors to have an x-ray of the chest, five cases of adult type pulmonary tuberculosis were found in a student body of 1608, or a case rate of .31 per cent.

Following that initial experiment with the whole student body, we have carried out a program which has varied somewhat in method from time to time, but which has aimed at a case-finding survey—largely compulsory — of all entering students, and a more or less voluntary survey of the graduating class. We are not under any illusion that this is the best program which could be evolved from the ideal public health standpoint. It has many shortcomings, of which probably the most glaring is that only entering students are involved in a compulsory survey. But in spite of these faults we have been able to make a diagnosis of adult type pulmonary tuberculosis in our entering classes varying from .49 per cent in 1935 to .24 per cent in 1938. While no completely accurate data are available, I can say from my own experience, dating from 1925, that the diagnoses of pulmonary tuberculosis made on our students before 1932, when this program was inaugurated, were practically nil.

Our figures then, coupled with those previously quoted from the whole group of colleges, make absolutely ridiculous quotations from letters received by the Tuberculosis Committee of the American Student Health Association, from colleges where there is no case-finding program. I take the liberty of repeating a few of these quotations taken from the 1938 report of the committee.

"I beg to advise you that we have no tuberculosis in —— College."

"From my knowledge and experience of the place I would say that tuberculosis is not in any way a part here."

"Our students come from only the best homes. We do not have any cases of tuberculosis."

This brings us naturally to the subject of methods, which, while not so interesting as that of results, is of the utmost importance in a program of this kind. In order to be as simple and direct as possible, I will state briefly what our methods have been in the past, and what they are at present; and then try to evaluate briefly the various changes made, and perhaps come to the defense of our present method of the universal chest x-ray, which may seem to many of you to require considerable defense.

In 1932, when the program was first inaugurated, we attempted to do a Mantoux skin test, using a dosage of .1 cc. of 1/1000 O. T. on every student. While this was never entirely possible, owing to the fact that there was objection to the test on the part of a very few parents, but more particularly because we were never able to get quite one hundred per cent co-operation from the students in reporting back to the physicians to show the result of their skin tests, we soon reached the point where a very large percentage—almost one hundred per cent—of our students were having Mantoux tests made and interpreted. The intradermal injections were made at the college gymnasium, where the students were registering for the first semester, and the tests were read at the Infirmary forty-eight hours later. All positive reactors were sent for and asked to sign up for chest x-rays, for which they were at first charged $2.00, then $1.50, and later $1.00 in addition to their regular medical fee. These plates were at first made at the Guilford County Sanatorium, but in 1934, with the purchase of x-ray equipment by the college, they were made in our Physics Department, in connection with a course for laboratory technicians being given by that department. A good deal of pressure was put upon positive reactors to have films taken; but while we found it much easier to induce students to have x-rays made right on the campus than when there was the difficulty of transportation to the Sanatorium, we were never entirely successful in obtaining their co-operation. However the percentage of films made of positive reactors constantly increased, so that while there were less than 50 per cent taken in 1932, by 1935 there were 94 per cent. I might say parenthetically that these percentages correspond rather favorably with those obtained in other colleges where this method is used. During all this time the plates were read by the staff of the North Carolina State Sanatorium, who by their active co-operation have made all this work possible.

In 1937 we changed our method to that of requiring a chest x-ray of every entering student without attempting a Mantoux test on any of them. The universality of this procedure made it possible to collect the fee with the tuition, thus obviating the objection of the individual student to expending a dollar, more or less voluntarily, for an object which she often chose to consider useless. It was therefore much easier to get complete coverage of the entering classes, and we have been successful in this for the past two years. In 1937 these plates were all sent to the State Sanatorium for examination; but with almost 900 entering students, this procedure imposed an unbearably heavy burden upon the staff. So in 1938 we examined all plates ourselves, eliminating thereby the obviously negative ones, and sending to the Sanatorium physicians only such films as seemed to us possibly suspicious of tuberculous involvement.

When reports come back on these plates from the Sanatorium, it is our custom to send form letters to all students having negative films congratulating them on that fact. Those showing either Ghon tubercles or calcified glands, and those showing adult infiltration are interviewed personally, the lesion found is carefully explained to them, and advice given them as to the future conduct of their case, if any seems necessary. Letters are also sent to the parents of all students having any positive lesion, in which as full an explanation of the condition as possible is given. Personal interviews with the parents are suggested, if the lesion seems to be at all serious or active, and many parents themselves seek such interviews concerning their daughters' reports. It is always urged that the letters be shown to the family physician, that the case be fully discussed with him, and that the student herself go to him for examination and advice, taking the x-ray film with her. A very few of our students have had lesions extensive or active enough to require Sanatorium treatment, and all other cases have been followed carefully here at the college, with frequent x-rays, temperature records, sputum examinations, etc., as the occasion demands. Tuberculin tests are done on students with positive x-ray findings, and occasionally show negative reactions. Such a condition of course calls for further study of the student and of her x-ray plates, and for further and heavier tuberculin dosage.

We have never made the examination of the entire senior class as compulsory a matter as that of the freshmen. Differing amounts of pressure have been put on the seniors from year to year with varying results, but with never more than a rather small percentage responding. As we all remember, dollar bills are hard things to come by near the end of one's senior year in college, and this is particularly true in a woman's college. Moreover, most of our seniors have been reasonably healthy for the four years they have been under our observation, and many of them have gained weight. Symptomless, excessively occupied with the social and academic whirl that makes up the modern college, and usually poor as Job's turkey, a senior is not easily persuaded to invest her time and her dollar in an x-ray of her chest.

This year I thought it would be both interesting and educational—chiefly to myself—to see what an appeal to reason, without other pressure, would do for this situation. Accordingly, I wrote a letter, explaining as carefully and clearly as possible, exactly why it seemed to us wise for young women about to graduate from college to take advantage of the opportunity offered them for a chest x-ray at an exceedingly reasonable price. The letter ended with the simple but wistful hope that they would see the situation as I did and come to the Infirmary and sign for x-rays. With nothing more than this, almost exactly one-third of the approximately 400 seniors responded to this letter and had chest plates made. Not good, you say! Well, not bad either, I think, considering all the factors involved. A few more in whom for some reason x-rays seemed particularly necessary were later interviewed, and as a result have had plates made. But the first group were entirely uncoerced.

It is probable that in the future we should make x-ray examination as hard and fast a rule for seniors as for freshmen. Indeed the fact that the senior is at a more vulnerable age than the freshman would make this seem most necessary. However, our present method might be called an educational experiment, which perhaps has some inherent value of its own.

Finally, let us return to an evaluation of the two methods of examination which we have tried at this college, and which have each been used at different colleges—namely tuberculin skin testing with the x-ray examination of positives vs. the primary x-raying of each student without preliminary skin testing. Let me say first of all that "evaluation" is far too ambitious a term for me to use at this point. Indeed, it is doubtful if a true evaluation could be made by anyone, given the limited and confusing data which we have at present; and certainly my extremely limited knowledge of the diagnosis of tuberculosis would make such an attempt valueless and even pretentious on my part. My excuse then, for embarking upon this subject at all, is that a brief resume of the arguments pro and con, and some record of the results obtained by us and by others with the two methods, might serve to stimulate a real fact-finding program along this line.

First, then, it would seem that the infallibility of the Mantoux test as a criterion of tuberculous infection must be more nearly established or disproved by unbiased data. If it is possible for persons who suffer from a tuberculous infection to show negative intradermal skin tests, then we may be passing up cases of tuberculosis unless we x-ray each individual in the group. Of course we are all aware that a severe or overwhelming tuberculous infection as well as certain other acute infections occasionally result in a negative Mantoux test. But these conditions are not apt to be very common or confusing in routine college health examinations.

On the other hand, there are some indications in recent publications that routine tuberculin testing is often far from infallible. For instance, a paper in the January 1939 issue of the *American Journal of Public Health*, written by Drs. Lusden, Dearing, and Brown, of the U. S. Public Health Service, shows first, the wide variation in percentage of postive reactors, from 10.2 per cent up to 88.6 per cent, depending on the preparation and dosage of tuberculin used; and, second, throws discredit on any tuberculin testing program, by showing that in Giles County, Tennessee, of 12 school children who showed pulmonary lesions, regarded as clinically significant, 7 were negative and 5 positive to a routine intradermal test with a standardized commercial P. P. D. in a dosage considered adequate by such an eminent authority as Dr. Esmond Long of the Henry Phipps Institute.

Figures not quite so damning to the tuberculin test, but which still tend to throw considerable doubt on results, at least with the average dosage of Old Tuberculin, were editorially discussed June 18, 1932, in the *Journal of the American Medical Association.* The data were taken from a report of P. D. Hart to the Medical Research Council of London, in the same year. He had studied 1030 clinically tuberculous patients of all ages, and found that 38, or 3.7 per cent failed to react to .1 cc. dosage of a 1/1000 solution of O. T., which is the average dose, and that 2.7 per cent were negative even to .1 cc. dosage of a 1/100 solution.

In addition the records of the Tuberculosis Committee of the American Student Health Association show that in the year 1937, when separate records were kept for colleges using different methods of case-finding, .3 per cent adult type cases were found in colleges which used the combined methods of skin testing and x-ray, whereas .7 per cent cases were found in the colleges with a universal program of x-rays. In other words, case-finding was over twice as successful when each student was x-rayed regardless of his tuberculin test.

Of course a good deal of this argument might be eliminated if an adequate, and at the same time safe dosage of tuberculin could be agreed upon by all authorities. At present the two dose method with P. P. D. seems to be the most favored, and to meet best the qualifications of adequacy and safety. But here we are brought face to face with the untold practical difficulties, which every college that has tried this method has met, in administering two doses of this material to a large group of students. For my own part it seems to me almost impossible to obtain enough student co-operation in the administration and reading of two separate doses to make it practical at all. After all, important as it is, tuberculosis case-finding is only part of our job as student health physicians, and the time and effort involved in such a program would take an overwhelming amount of the energy which we need to devote to the whole problem of student health.

In answer to such data and argument about the reliability of tuberculin testing, those who advocate such testing as the most important case-finding procedure (and they include excellent tuberculosis specialists) point to the fact that only by some form of tuberculin testing is it possible really to indicate to a student whether she has ever had a tuberculous infection. We all know and admit that many such infections leave no calcified areas in the lungs, detectable by x-ray examination. They say too, and truly, that very important information is obtainable by a negative tuberculin test in the freshman year, with a positive test in a subsequent year — information as to contacts, etc., which is obtainable in no other way. And all this might easily be missed without the tuberculin test.

Other arguments and other data might easily be added by the advocates of each of these methods. The controversy rages, and those of us who deal practically with the problem in the colleges await authoritative research on the whole problem. I note with encouragement that at the next meeting of the National Tuberculosis Association, to be held in Boston in June of this year, there will be a symposium on the subject, "Mass Tuberculin Testing and X-Raying — A Review of the Present Status", and that one paper in that symposium is to be on "Tuberculin" by Dr. Esmond Long, Director of the Henry Phipps Institute, and a second is on "X-Ray Findings in Negative and Positive Reactors", by Dr. Bruce H. Douglas, Tuberculosis Controller of the Detroit Department of Health. It would seem probable that statistics which might be offered, particularly by Dr. Douglas, on the extensive work done in Detroit during the last two years, would go far to solve some of the problems which I have tried to raise in this paper and which have long troubled the minds of all public health administrators.

In the meantime I suppose most of us will go on as we have been doing, undertaking the type of program which seems to us most practical, considering equipment and staff, and which also seems to us relatively efficient in finding cases of tuberculosis. Thus we note that several universities with large medical staffs, who can employ expert roentgenologists and have adequate fluoroscopic equipment, are relying on the fluoroscope to act as a screen in the detection of cases, following this with flat or stereoscopic plates in suspicious cases. More of the women's colleges are using x-ray methods than are the men's colleges, and I suspect that, as with us, the emotional difficulties incident to tuberculin testing in young women, caused the preference for the universal x-rays.

Thus it can be seen that this problem of finding cases of tuberculosis in college students is far from a simple one. We want you to know its complexities and difficulties. If this rather wandering and far from conclusive paper has helped to give you, the physicians of our students, a sympathetic understanding of our problems and how we are attempting to meet them, it may be worth while to have presented it to you.

Discussion

DR. J. H. McNEILL (North Wilkesboro): Our county is using a case-finding method which is outlined by the state of North Carolina. Among the children of school age, tuberculin testing is done on all children who show an underweight of 10 per cent or more. Positive reactors are x-rayed. Unfortunately, the county has no money to pay for such x-rays and the family has to do so, at the full rate whenever they can, and at charity rates otherwise at our local hospital.

Our next effort to find tuberculosis is through the fluoroscopic clinic also offered by the state and held yearly. We make a strenuous effort to have any person who has any contact whatsoever with tuberculosis to have a fluoroscopic examination, and if anything significant is seen there, to have chest films made.

In that way we have been able to pick up quite a good many cases which otherwise would probably have gone on to full active tuberculosis. I thoroughly agree with Dr. Collings that the diagnosis must be made early and soon. I don't know who it was that said that early tuberculosis should be seen and not heard.

CHAIRMAN YODER: Early tuberculosis must be seen and cannot be heard.

CHRONIC ACETANILID POISONING WITH ADDICTION

DONALD McINTOSH, JR., M.D.

MARION

The toxicity of acetanilid in excessive dosages and the clinical picture of acute and chronic acetanilid poisoning with addiction have been recognized by the medical profession since the introduction of the drug as an antipyretic in 1886. As early as 1895 case reports (1) of acetanilid poisoning began to appear in the medical literature. Extensive use by the profession, and the early introduction of the drug to the laity in the form of various proprietary nostrums and headache powders, soon led to a large number of case reports of acetanilid poisoning Austin and Larrabee(2), Sutherland(3), Robinson(4), and Quigley(5), reported cases of son(4), and Quingley(5), reported cases of acetanilid poisoning, and expressed their disapproval of the widespread use of the many

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Read before the Section on General Practice, Medical Society of the State of North Carolina, Bermuda Cruise, May 10, 1939.

1. Rosenberger, R. C.: A Case of Acetanilid Poisoning with Recovery, Phila. Polyclinic 4:460, 1895.
2. Austin, A. E., and Larrabee, R. C.: Acetanilid Poisoning from the Use of Proprietary Headache Powders, J.A.M.A. 46:1680, (June 2) 1906.
3. Sutherland, E. L.: Acetanilid Poisoning, Medical Sentinel, Portland, Oregon 14:466, 1906.
4. Robinson, W. J.: Impotence Caused by Excessive Consumption of Bromo-Seltzer, J.A.M.A. 47:508, (August 18) 1906.
5. Quigley, D. F.: Acetanilid in Bromo-Seltzer, J.A.M.A. 46:454, (March 24) 1906.

nostrums and proprietary powders. Nadler(6), Stengel(7), Fisher(8), and many others have stressed the strong habit producing qualities of the drug. Excellent experimental and clinical studies on the physiological effect of acetanilid have been made (9), (10), (11). Today, however, I feel that few of us realize the true proportions of the problem of drug poisoning, and certainly the current literature is not indicative of the extent of the problems arising from addiction to acetanilid.

Acetanilid belongs to the group of so-called "coal-tar antipyretics" and occurs as a white powder or crystals. It is very cheap and can be bought in bulk for about thirty cents per pound. Because of its relative insolubility, it is usually dispensed in powder or tablet form. Hale(12) has shown experimentally that the addition of sodium bicarbonate decreases the toxicity of the drug, while caffeine tends to increase it.

Acetanilid is used as an antipyretic, an analgesic, and locally as an ointment or dusting powder in various skin diseases. The less toxic coal-tar derivatives, such as phenacetin, and the salicylates are now thought to be more suitable as antipyretics, and have largely supplanted its use. It is rarely used locally now because of the dangers of toxic absorption. Herricks and Irons(12A), Gartman and Ball, and Rosenberger(1) reported cases of acetanilid poisoning from local absorption.

Acetanilid is now used chiefly as an analgesic agent. The drug is remarkably efficient and quick in relieving pain, and in similar doses is apparently more powerful than the other coal-tar preparations. Acetanilid is especially useful in the neuralgic or muscular types of pain. Headaches and migraine can sometimes be better controlled with it than with other drugs. Traumatic pain is not so effectively combated. Sodium bromide enhances the sedative effect on the cerebrum, and the combination of codeine and acetanilid often shows an analgesic action comparable to that of morphine.

I wish to stress the fact that acetanilid, dispensed in ordinary therapeutic doses by reputable physicians who understand the possibilities of toxic effects and the tendency to habituation, is a useful and comparatively safe drug. Lowy and Helms(9) and others have shown through careful animal and human experiments that the drug in ordinary doses does not have any deleterious or permanent effect on the body.

Acetanilid in excessive amounts or in susceptible persons acts as a powerful poison. The poisoning occurs in both the acute and chronic forms, and numerous deaths have been reported. Kebler, Morgan, and Rupp(13) discussed the result of a questionnaire to 288 physicians, and found that 219, or 76 per cent, had observed instances of acetanilid poisoning. Of the 614 cases reported by these physicians, there were 17 deaths, some occurring from doses as low as 1½ grains in infants and 20 grains in adults. Summers(14) reports a case of severe poisoning following the administration of 8 grains of acetanilid for relief of headache. Quigley(5) reported severe poisoning from a single dose of Bromo-Seltzer, and Tyrell's(15) patient barely escaped death from one dram of acetanilid powder.

The onset of acute poisoning is rapid and may quickly assume alarming proportions. The outstanding features are deep cyanosis of the lips and entire body, and the symptoms of collapse. The temperature drops to subnormal and there is marked sweating and prostration; the respiration is slow and shallow; the pulse weak and rapid with irregularities. Coma and cardiac arrest soon follow.

Chronic poisoning is at times more difficult to detect, because in some patients the symptoms are not pronounced, and because patients addicted to the use of acetanilid

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6. Nadler, W. H.: Acetanilid Addiction: A Report of a Case, J.A.M.A. 74:1717, (June 19) 1920.
7. Stengel, A.: Chronic Acetanilid Poisoning: Report of Two Addiction Cases, J.A.M.A. 45:243-245, 1905.
8. Fisher, L. C.: Chronic Acetanilid Poisoning, J.A.M.A. 100:736, (March 11) 1933.
9. Lowy, O., and Helms, S. T.: Study of the Physiological Effect of Acetanilid on Human Subjects, Medical Record 140:561.
10. Yound and Wilson: Toxicological and Hematological Studies of Acetanilid Poisoning, Jour. of Pharm. and Exper. Therap. 27:133, 1926.
11. Payne: Acetanilid Poisoning: A Clinical and Experimental Study, Jour. of Pharm. and Exper. Therap. 53:401, 1935.
12. Hale: The Cyclopedia of Medicine, Vol. I: 48.
12A. Herricks and Irons: Chronic Acetanilid Poisoning, J.A.M.A. 46:351, 1906.
14. Summers: A Case of Acetanilid Poisoning, N. Y. Med. J. 71:426, 1900.
13. Kebler, Morgan, and Rupp: The Cyclopedia of Medicine, Vol. I: 51.
15. Tyrell: Acute Acetanilid Poisoning, J.A.M.A. 46:955, 1906.

often try to conceal or minimize their affliction.

The symptoms of chronic poisoning usually follow a definite pattern, and produce a symptom complex which Gardinier(16) states is diagnostic of the condition. Certainly, examination of the various case reports reveals a marked similarity of symptoms and physical findings. The onset of symptoms is usually gradual and they are often obscured by the complaints or symptoms for which the acetanilid was originally taken. The most striking symptom is marked cyanosis, which is most noticeable at the lips, mucous membranes, nose, lobes of the ears, and the fingers. There is usually some degree of anemia, so that the skin has a pale, bluish color. General weakness, easy fatigability, palpitation and dyspnea are constant complaints. The appetite is poor, and various digestive disturbances are common. Constipation alternating with diarrhea is often seen. Nervous excitability has been described, but as a rule the patients are rather dull and apathetic, with a tendency to insomnia. The pulse is fast and compressible. Enlargement of the heart, spleen, and liver has frequently been noticed (16) (17).

Most investigators agree that there is a definite anemia due to the destructive action of the acetanilid on the red corpuscles. Payne(11) found that the initial action of the drug is destructive, producing a severe anemia; but with prolonged administration, there is excessive stimulation of the blood forming organs, and the rate of red cell formation may be greater than the obstructive rate, thus producing a relative increase in the red count and hemoglobin. The white blood cell may be affected also. Kracke(19) observed a case of agranulocytosis resulting from acetanilid. The blood uniformly appears dark or chocolate color in this type of poisoning.

There has been a marked divergence of opinion as to the etiology of the cyanosis. The formation of methemoglobin in the blood is in all probability an important factor, although the observations of numerous investigators tend to minimize this element (20), (10), (21), (9). According to these and other writers, the cyanosis is due to the presence of dark colored derivatives of para-aminophenol in the plasma and tissues, the para-aminophenol resulting from the decomposition of acetanilid. The para-aminophenol is secreted in the urine, producing the dark, reddish brown color that is characteristic of all cases.

Tolerance to the drug is developed in most instances and at times may become very pronounced. Enormous doses of acetanilid have been taken in some cases with little toxic effect. The severity of the drug addiction usually parallels the degree of tolerance. Withdrawal symptoms are apt to be quite severe, with exaggeration of the complaints for which the drug was originally taken.

Two case reports of chronic poisoning with addiction will be presented:

Case 1: C. J., 47, a white male textile worker, was seen at my office in June 1936, with the chief complaint of severe frontal headache. He stated that the headache, which first appeared nine years previously had begun shortly after starting work on the night shift in a textile mill. During the first few years, he did not consult a physician but sought relief in various patent remedies. Five years previously he began taking "B. C. Headache Powders," and soon found that this was the only remedy which would give him relief. The headaches gradually increased in severity and a proportionately larger number of powders was required. At the time of his first visit, he was taking from 6 to 10 powders daily. Upon being questioned, he revealed further symptoms. He stated that for two or three years he had not been in good health. His appetite was poor, and there was some weight loss. He tired easily and had difficulty at times in continuing his work. Moderate exertion caused palpitation and shortness of breath. He stated that he was bothered with a gaseous type of indigestion which he attributed to constipation. At intervals there were attacks of "upset stomach" with vomiting and diarrhea. He believed that his vision was poor.

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16. Gardinier: Chronic Acetanilid Poisoning a Perfectly Definite Symptom Complex, Boston M. and S. J. 165:199, 1911.
17. Stengel and White: A Case of Acetanilid Poisoning with Definite Blood Changes, U. of Penn. Med. Bulletin, 15:462, 1902-1903.
19. Kracke: Relation of Drug Therapy to Neutropenic States, J.A.M.A. 111:1255, 1938.
20. Bachman: Cyanosis from Acetanilid, N. Y. Med. J. 65:708, 1897.
21. Lundsteen: Chronic Acetanilid Poisoning, Abstracts, J.A.M.A. 111:2534, 1938.

The patient was of small stature and appeared rather weak. He seemed dull, apathetic and resentful. The outstanding feature of the physical examination was the peculiar color of the skin. The patient was pale and anemic, but a bluish, cyanotic tinge was superimposed on this pallor. This cyanosis was most evident at the lips, mucous membrane, and fingers. The nail beds were a pale, bluish-white color. The pulse was slightly accelerated, (80 per minute), and the blood pressure rather low (110/70). There were carious teeth, diseased tonsils and epigastric tenderness. The rest of the examination was essentially negative. The urine was dark amber, with a questionable trace of albumen.

An eye consultation was advised, and the subsequent examination revealed some refractive error with eye strain. I believe this to be the original cause of the headaches.

I next saw this patient about one year later, when I was called to his home by his wife, who told me that her husband had "lost his mind". She stated that he had been steadily increasing his consumption of B. C. powders, and had recently been taking large doses of brominyl and barbital in addition. On one recent occasion he had taken twenty-two B. C. powders within a four hour period, which represents approximately 88 grains of acetanilid and 264 grains of bromide. With the increase in drugs, the mental changes had become increasingly apparent. Because of the pronounced mental derangement and the impossibility of controlling the patient at home, he was sent to a nearby sanatorium for a few weeks. He was discharged, apparently relieved of his drug addiction.

When questioned recently, he stated that his headaches quickly returned after his discharge from the sanatorium, and he was forced to go back to the B. C.'s for relief. He is now taking approximately 40 to 60 grains of acetanilid daily. The cost of these powders amounts to $2.50 to $3.50 each week.

Case 2: J.Y. S., 48, a white male textile worker, complained of persistent headache, nervousness, and intermittent cough extending over a three year period, and general weakness. He also complained of various pains all over the body, most marked in the chest and back. Other symptoms were shortness of breath, and a gaseous type of indigestion. Recently he was having attacks of dizziness and "blind spells". Examination of the patient revealed an early Bronchiectasis with Vincent's organisms predominating in the sputum. The pulse was slightly fast, B. P. 180/110. There was slight cardiac enlargement and general tenderness throughout the abdomen. There was evidence of Vincent's infection of the gums. In this patient also, the striking finding was the marked pallor and cyanotic appearance of the skin and mucous membrane. There was a definite icteric tint to the sclera.

The patient admitted that for the past eight years he had been taking large amounts of "B. C. Headache Powders" for the relief of chronic headache and nervousness. He had gradually increased the amount necessary for relief, so that at the present time he averages twelve to eighteen powders containing 48-72 grains of acetanilid daily. At times he has taken more. The cost of his powders usually represent the earnings of one day's work each week. He states that he finds it impossible to work without the powders and that he usually has to take one or two during the night. His wife says that he has lost a great deal of time from his work since he began the B. C. habit, and in spite of repeated warnings, he continues with the addiction.

Comment

Acetanilid poisoning and drug addiction have constituted a problem to the medical profession since 1900. The indiscriminate use of acetanilid and the early introduction to the public of the various proprietary nostrums containing acetanilid led to many cases of poisoning. As early as 1906 Austin and Larrabee, in reporting two cases of acetanilid addiction from a preparation called "Nervease" state: "The lesson is that drugs of this dangerous character should not be dispensed except on a physician's prescription, and their sale should be as strictly guarded as is that of Strychnia or aconite." Following this and other publications adverse propaganda by the medical profession apparently produced a relative decrease in the number of cases of poisoning and addiction. However, within the last few years there has been a tremendous increase in the number of cases, due to the wholesale advertising of patent medicines to the laity.

One cannot read a paper, listen to the radio, or drive along country roads without being impressed with the extensive advertising campaign. Such nostrums are sold without the slightest restrictions or warning concerning toxicity, excessive dosages, or habit formation. The various types of powders are dispensed in large quantities everywhere from grocery stores to filling stations. As a result of inquiries at one of the grocery stores in a mill village in my community, I found that this store alone sold over one gross of packages containing two powders each of a well known patent powder each week. The sale in another store in a different mill village averaged a gross every three weeks. These are rather startling figures when we realize that there are numerous other places dispensing the same powder in each community. Incidentally, the clerk in the first store mentioned the fact that practically all of the powders were sold each week to the same customers, numbering about twelve in all.

The two headache powders most commonly used in my district are known as "B. C." and "Stanback." A recent analysis of these powders by government chemist for the Food and Drug Administration (J. A. M. A., July 23, 1938, Page 338) showed each powder of B.C. to contain approximately four grains of acetanilid, 6½ grains of salicylic acid, and 12 grains of potassium bromide. The Stanback powder contained about 2 grains of acetanilid, 6 grains of acetysalicylic acid, and 12 grains of potassium bromide. Bromo-Seltzer, which has long been a favorite, contains approximately 3 to 3½ grains of acetanilid to the dose.

Chronic acetanilid poisoning with addiction is found among all classes of people, but is a major problem in the industrial and rural communities. It is very prevalent in the textile districts of the South. Payne(11) states that each week several cases of chronic poisoning by "pain killer" remedies are seen in the out-patient department of Duke Hospital. Every physician with whom I have discussed the problem has seen various instances of the social, economic, and physical damage produced by acetanilid addiction.

The family physician and general practitioner is the one who is most frequently called upon to treat these unfortunate victims, and it is this group of the medical profession which should be vitally interested in working out a solution to this ever-increasing problem. It represents a challenge which we should meet at once.

I can see only one proper solution to the problem arising from the indiscriminate use of such toxic and dangerous drugs as acetanilid. Dispensing of the drug should be limited to the medical profession, and the prescriptions should be non-refillable, as with the narcotics. Until the drug is placed on this basis, it is our duty to acquaint the public by every means possible with the dangers and habit-forming possibilities of nostrums containing acetanilid.

Discussion

DR. T. W. BAKER (Charlotte): I want to congratulate Dr. McIntosh on a very splendid paper indeed.

There is one little point I would like to emphasize here: In many of these cases in which we are seeing poisonings from the patented headache remedies, the trouble is due as much to bromide intoxication as it is to acetanilid, I think. We are finding now far more frequently than we used to believe that a lot of our psychoses of a temporary nature are really due to bromides, and several recent surveys at mental sanatoria have revealed the fact that a number of patients are there because of a bromide intoxication. If we take a blood bromide on these patients we find it up above the level of 150 milligrams per 100 cc. of blood, which is usually a psychotic level. If we eliminate patent acetanilid bromide preparations, and give these patients sodium chloride intravenously and by mouth, we will find that many of our severe psychoses of a temporary nature will clear up within about a week's time.

The Interpretation of Laboratory Findings.—A basal metabolism which is reported as 15 per cent above normal may or may not be significant, and an electrocardiogram showing a prolonged conduction time may be due to one of several factors, but in either case the physician should not be forced to depend for the interpretation on the man who does the laboratory work and who presumably has a less intimate knowledge of the clinical condition of the patient. The clinician himself should be able to appraise the laboratory findings if the patient is to derive the greatest benefit.—Francis W. Peabody: Doctor and Patient, New York, The Macmillan Co., 1939.

Clinicians Needed More Than Technicians. — In spite of the extraordinary influence which the laboratory has had on the development of medical science there is as yet no cause for the physician to feel that he cannot keep up with the requirements of the best modern practice. All of the more important elements are easily within his grasp. The need in clinical medicine continues to be, not for men trained in many laboratory methods, but for men well grounded in a few methods—not for better technicians, but for better clinicians.—Francis W. Peabody: Doctor and Patient, New York, The Macmillan Co., 1939.

THE MANAGEMENT OF OLD CONTRACTURES OF THE HAND RESULTING FROM THIRD DEGREE BURNS

RANDOLPH JONES, JR., M.D.

Contractures of the hand and digits as a result of burns are common, and these deformities often may be corrected, with subsequent improvement in the function of the hand, by suitable operative measures. Supplementary physiotherapy directed toward early restoration of function is an invaluable adjunct to surgical treatment. Each patient presents an individual problem. It is important to estimate the depth of the scar, its attachment to the deeper structures of the hand, and possible distortion of them, before deciding on the method of repair to be used in the particular case. Although the deformity may have been present for a decade or more and may have existed during the growth period of the individual, much can be done to improve the usefulness and appearance of the member. Davis(1,2), Blair and Brown(3), and others who have obtained excellent results in treating these deformities have enumerated the principles used in their correction.

The cases with contractures of the hand presented herein fall readily into three groups. In the first are those patients having cicatrices on the palmar surfaces of the digits, which in some instances extend down on the palm itself and cause web-like flexion contractures of the fingers. These webs frequently may be released by the interposition of flaps formed by incisions made at an angle to an incision splitting the contracture itself along its leading edge, a procedure advocated by Morestin in 1914.

The scar in the second group of cases is broad, but is unattached to the deeper structures of the hand, and is best treated by excision of the cicatrix with the underlying fascia, leaving a protective layer of fat over the nerves, muscles, and tendons beneath. When the palm or the palmar surface of the finger is involved, the defect created by excision of the constricting scar may be covered with a full thickness or Wolfe Krause graft. A thick split graft may be used if the dorsum of the hand or the finger is to be covered with skin.

A representative contracture of the third type is caused by a scar which extends from the skin to the muscles, ligaments, tendons, or joints of the hand. This fibrous tissue should be stretched as much as possible by the intensive use of physiotherapy before operation. A full range of motion of the hand and fingers may follow excision of the cicatrices in many of these cases; but unless an adequate fat pad is interposed between the skin and the deeper structures, the constricting scar will in time re-form and the result will be unsatisfactory. Elastic traction and other physiotherapeutic measures

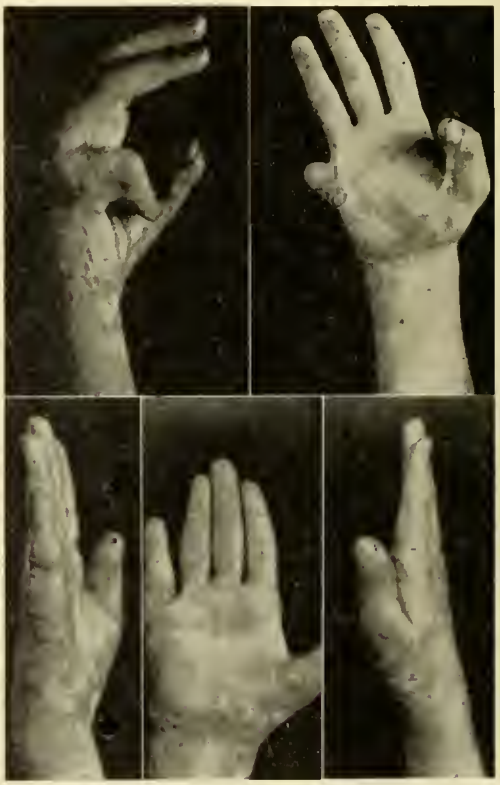

Fig. I. Contractures of the thumb and small finger resulting from a burn received 2½ years previously. These were released by the interposition of flaps formed by incisions made at an angle to the long axis of the web after the latter had been incised. The lower photographs were taken 5½ months after operation.

From the Department of Surgery, Duke University School of Medicine, Durham, N. C. Read before the Section on Surgery, Medical Society of the State of North Carolina, Bermuda Cruise, May 13, 1939.

1. Davis, John S.: The Use of Free Grafts of Whole Thickness Skin for the Relief of Contractures, Surg., Gynec., and Obst. 25:1, 1917.
2. Davis, John S.: Plastic Surgery, Its Principles and Practice, Philadelphia, P. Blakiston's Sons and Co., 1919.
3. Blair, V. P., and Brown, J. B.: The Use and Uses of Large Split Skin Grafts of Intermediate Thickness, Surg., Gynec., and Obst. 49:82, 1929.

are of great assistance in obtaining early return of function after operation.

The first group of cases mentioned above is exemplified by the patient's hand shown in Figure 1. This white girl, seven years of age, burned her right hand severely when she fell in an open fire two and one-half years before. Although the skin healed satisfactorily, the scars on the palmar aspects of the thumb and small finger had caused the flexion contractures visible in the photographs taken when she was admitted to the hospital. These were released by the interposition of flaps formed by suitable incisions on the sides of the webs. A satisfactory functional and cosmetic result was obtained.

Examples of the second group of broad contracted scars are the patient's hands shown in Figure 2. The left hand of this eleven year old boy had been burned ten years before when he fell against a hot stove. Subsequent scarring and contracture had prevented full extension of the fingers. The scar, which extended down to the palmar fascia, was completely removed, leaving a pad of fat overlying the deeper structures of the palm, upon which the full thickness graft took with an excellent functional result. Brown(3) has shown that when the scar is on the dorsum of the hand, durable skin may be obtained by using a thick split graft in this location.

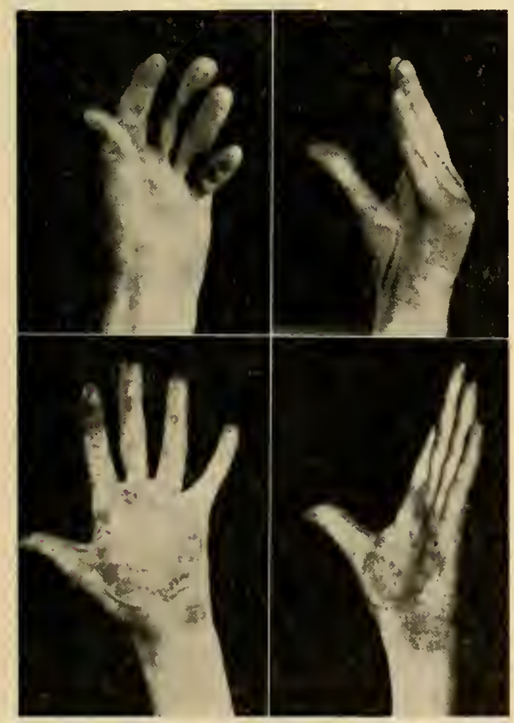

Fig. II. The palmar scar shown above followed a burn received when the patient fell against a hot stove 9 years before. The scar was excised, allowing the palm to return to approximately normal size. The full thickness graft used to cover the defect following excision of the scar has become a satisfactory palmar skin.

A contracture of the third group listed above is shown in Figure 3. At times the puckering of the scar, the limitation of motion present, and the duration of the contractures will produce a definite impression that the deeper structures are adherent to the skin cicatrix. When these findings are present, preparations can be made to place the hand beneath an abdominal flap of skin and sub-cutaneous fat, or to raise a tube flap if this is thought best. At other times, however, the operator may plan to cover the defect left by excision of a palmar contracture with a full thickness graft, but may at operation find that the scar is deeper than first estimated and that the flexor tendons and the carpal ligaments are exposed after the removal of the cicatrix.

A situation of this kind was encountered at operation on this patient's hand shown in Figure 3. In order to provide the necessary palmar skin and to cover the flexor tendons and the transverse carpal ligament with fat, the defect was filled with a pedicle flap raised from the abdominal wall. The area from which the flap had been taken was covered at the same time with a Thiersch graft. By this means the cushion of fat necessary to maintain normal tendon function was obtained, and a deformity which had been present for fourteen years was effectively corrected.

A pedicle or tube flap with its subcutaneous fat may prove the only means of releasing a contracture which other measures have failed to relieve. An illustration of this was seen in the treatment of the deformed hand shown in Figure 4. Two operations elsewhere had failed to release the contracted fingers, and although some improvement followed the interposition of angle flaps along the contracture combined with the application of palmar full thickness grafts, it was necessary eventually to transplant a tube flap to the palm and fingers before a full range of motion could be obtained.

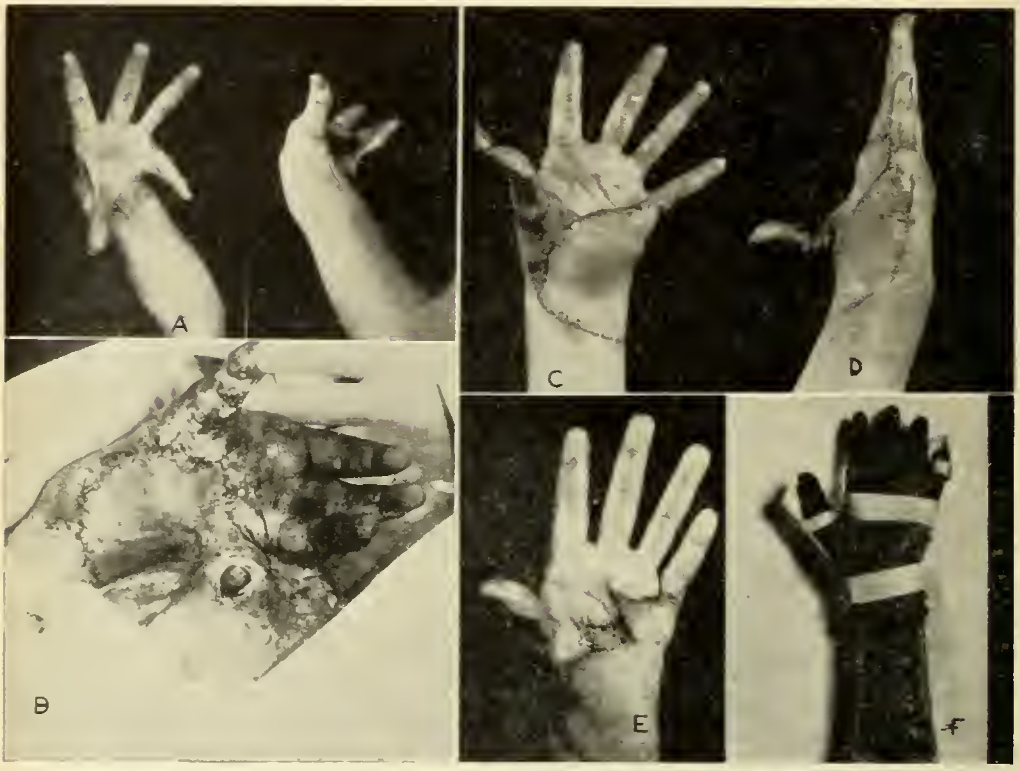

Fig. III. A. Contractures of the thumb and small finger of 14 years' duration. B. The scar tissue has been excised and the palmar defect covered with a pedicle flap which is still attached to the abdominal wall. C. and D. Hand, shortly after division of the abdominal pedicle flap. E. Hand after the transverse scar across the palm had been lengthened. F. Splint to be worn at night for six months.

About the periphery of extensive scars there are often one or more band or web-like contractures. Release of these by the interposition of angle flaps usually makes the correction of the main scarred area easier, and results in more normal tension after the deep cicatrix has been excised. The web at the wrist shown in Figure 5 was released in this manner, and the palm reconstructed by a tube flap from the abdominal wall.

The third type of contracture may be associated with damaged tendons or nerves and with some bone deformity. Kanavel,(4) Bunnell,(5) Mason,(6) Meyer,(7) and Koch(8) have stated the principles to be followed in the management of these complicated problems, and a discussion of this type of case is beyond the scope of this paper. Nevertheless, too much emphasis cannot be placed on preventing skin contractures following third degree burns by early restoration of the skin loss and early resumption of function. When the hand is involved, the "thick split" graft of Blair and Brown(3) answers this need better than any means yet devised.

In the management of old contractures proper physiotherapy and splinting, with the use of elastic traction in cases of long standing, are of greatest assistance in obtaining an adequate return of function. In the majority of the cases presented herein it was found advisable for a splint to be worn at night for six months, maintaining and increasing the reduction of the contracture secured at operation. Gentle massage of a bland ointment into the scars for two to three months after operation increases their later pliability.

4. Kanavel, Allen B.: Infections of the Hand, ed. 6, Philadelphia, Lea and Febiger, 1933.
5. Bunnell, Sterling: The Surgery of Tendons, in Lewis: Practice of Surgery, Hagerstown, Md., W. F. Prior Co., Inc., 1930, vol. 6.
6. Mason, M. L.: Immediate and Delayed Tendon Repair, Surg., Gynec., and Obst. 62:149, 1936.
7. Meyer, L., Ransohoff, N. S.: Contribution to Physiological Method of Repair of Damaged Finger Tendons; Preliminary Report on Reconstruction of Destroyed Tendon Sheath, Am. J. Surg. 31:56, 1936.
8. Koch, S. L. and Mason, M. L.: Purposeful Splinting Following Injuries of the Hand, Surg., Gynec., and Obst., 68:1, 1939.

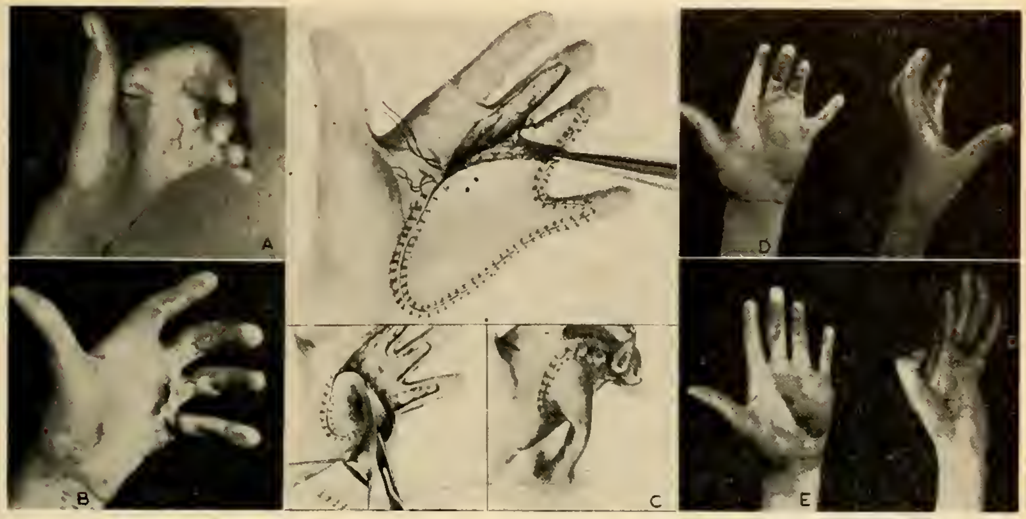

Fig. IV. A. A scar of the palm and the palmar surfaces of the fingers 5 years after a burn. B. Partial relaxation has been obtained by the interposition of skin flaps and the transplantation of several small full thickness grafts. C. Transplantation of a tube flap from the abdominal wall to the palm, after the palmar scars had been excised. D. Hand shortly after and (E.) two years after transplantation of tube flap.

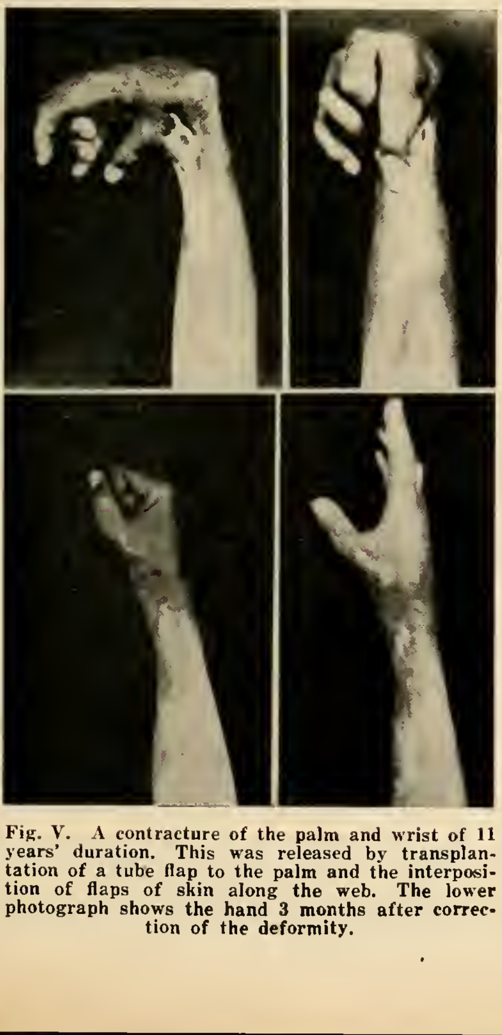

Fig. V. A contracture of the palm and wrist of 11 years' duration. This was released by transplantation of a tube flap to the palm and the interposition of flaps of skin along the web. The lower photograph shows the hand 3 months after correction of the deformity.

Abstract of Discussion

DR. J. L. WINSTEAD (Greenville): Dr. Jones has told you how to treat contractures of the hand. I shall attempt to tell you how to prevent them.

Severe and untreated acute infections in the hand result in contractures with deformity and disability. Kanaval has shown that infection spreads along the blood vessels and nerves. The resulting scar tissue compresses the blood vessels, nerves and lymphatics, causing trophic changes. Joints are ankylosed, muscles contracted, and tendons destroyed or disabled by adhesions.

The pathological picture is one of destruction of blood and nerve supply with massive connective-tissue contraction about structures that have a most delicate function. Much can be done by prophylactic measures and active treatment to preserve and restore function. We should constantly bear in mind that we are not only attempting to overcome infection but also to preserve function. Most hand infections can be prevented by the administration of proper treatment immediately to injured hands. Sometimes a most serious infection will follow a slight injury because the injury received no treatment, or inadequate treatment. The staphylococcus is the organism in most hand infections. The streptococcus comes next in frequency, and usually causes a very rapid, severe inflammation with a marked tendency to spread to various spaces in the hand and to the forearm. The anemic, undernourished, or run-down individual is far more prone to infections.

When infection does occur, hot moist dressings continuously applied for twenty-four to forty-eight hours with complete rest will often abort it.

Hand infections are serious from their inception and demand proper diagnosis of the type and nature of the infection.

When pus appears, its exact location should be determined. The abscess should be incised properly in order to establish adequate drainage and yet not spread the infection to other spaces. In severe infections of the hand where stiffening and loss of function is impending it is of great importance to splint the hand in the "position of function"—that is, forty-five degrees dorsal flexion of the wrist. The phalanges at the metacarpo-phalangeal and phalangeal joints should be flexed to the same angle, and, most important, the thumb should be abducted from the palm, adducted toward the ulnar side of the hand, and rotated so that the flexor surface of the thumb is opposite the flexor surface of the index finger. This position should be maintained throughout the treatment except when the hand is undergoing physiotherapy.

DR. PARKER C. HARDIN (Monroe): I noted that Dr. Jones based his discussion on the fact that most of these cases follow burns—old neglected burns. For some time I have been interested in the question of the healing of burns in relation to the necessity of skin grafting, and have been trying to find out just exactly the amount of skin grafting necessary following the various types of therapy in major burns. We can, by studying the results in the different methods, find out those in which most skin grafting is required. We can look forward to the time when we can eventually choose for various burns the method which will lead to the least amount of scarring.

With contractures resulting from a burn it is wise to resort to skin grafting as soon as the wound is in condition to do so.

DR. RANDOLPH JONES, JR. (Durham): I endorse most heartily Dr. Winstead's emphasis upon the necessity of treating any infection that is present in the hand. Infection that is present even in burns should be treated intensely.

If any method is used in which coagulum forms over a third degree burn much is to be gained by moving that coagulum as early as separation begins.

Urinalysis.—The methods for the examination of the urine are taught much as they were two decades and more ago. Certain tests, such as urea determinations, have been discarded and others are regarded as having a different significance, but the records still show the color, specific gravity, reaction, albumin and sugar content, and the microscopic examination of the sediment. These simple observations, correctly used and interpreted, are practically all that is necessary in cases of nephritis. —Francis W. Peabody: Doctor and Patient, New York, The Macmilan Co., 1939.

Laboratory Procedures.—What is really needed in the application of laboratory methods to the practice of medicine is not a knowledge of more technical procedures, but a much more exact knowledge of a few. If every physician was so much at home with the technique of the simpler tests that it was quicker for him to apply them than to wonder whether they were worth while applying, and if he understood how to interpret these tests and gain the maximum information from them, the problem of the relation of the physician to the laboratory would be largely settled.—Francis W. Peabody: Doctor and Patient, New York, The Macmillan Co., 1939.

DIAGNOSIS AND TREATMENT OF NEUROSYPHILIS

J. P. Davis, M. D.

Winston-Salem

The proper management of patients with syphilis in private practice depends fundamentally on an early and accurate diagnosis. Despite the facts which have been derived from valuable experience by such men as Stokes, Grinker, Nonne and others, the early diagnosis of neurosyphilis very often is overlooked. Failure to diagnose neurosyphilis, when present in its early or incipient stage, may be as serious in its consequences as not recognizing cancer in its treatable stage. So much of the responsibility for the prevention of neurosyphilis rests upon the practicing physician that its diagnosis and treatment deserve more widespread discussion.

The incidence of neurosyphilis has been set at varying percentages. Stokes(1) estimates that 10 per cent of a general hospital population is syphilitic, of which between 60 and 70 per cent show evidence of neurosyphilis on complete examination. The proportion of 6 to 7 per cent of a general hospital population having syphilis of the central nervous system may appear high to many of us; but may the answer not be that we do not always recognize it?

A fact which is not generally appreciated by many of us who do general practice is that syphilis invades the nervous system long before symptoms appear. Stokes and McFarland(2) reported the results of routine spinal fluid studies on 114 early secondary untreated cases. Thirty-seven per cent showed abnormal spinal fluids, as indicated by a marked increase in cell count or a positive Wasserman reaction. Only 16 per cent revealed any symptoms of neurosyphilis, and none showed abnormal neurological signs. In patients who had received treatment the percentage of abnormal spinal fluid findings was lower. In a florid syphilitic infection the earlier the spinal fluid is examined, and the less treated the case, the higher the findings of meningeal involvement. About one-fourth of all early syphilis may be expected

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Read before the Section on the Practice of Medicine, Medical Society of the State of North Carolina, Bermuda Cruise, May 13, 1939.

1. Stokes, J. H.: Modern Clinical Syphilology, Philadelphia, W. B. Saunders Co., 1928, p. 902.
2. Ibid, p. 522.

to have neurosyphilis as an integral part of the clinical picture.

The practitioner is usually unable to detect any abnormal symptoms and signs, because most patients are entirely asymptomatic in the early stages of involvement. For this reason pathologic changes can only be detected by spinal fluid examination. Early changes in the nervous system are irritative, actually a meningeal reaction, and are thus devoid of marked signs or symptoms. The later changes which we detect when the pupils are fixed, the gait is affected, or the mental reactions are abnormal, represent a permanent damage or scarring of nervous tissues by the spirochetes.

The spinal fluid in early cases of meningeal involvement passes through a rather typical series of changes. The first warning of any trouble present is an increase in cell count and globulin content, representing purely a meningeal reaction. Later, as parenchymatous changes occur, serological reactions become positive. The spinal fluid serology is not likely to become positive until the infection is well established, which may be as long as one or two years after beginning invasion. The colloidal gold reaction appears only when the process is fully developed, representing a severe neurosyphilis.

The diagnosis of neurosyphilis in an early stage, aside from the study of the spinal fluid, depends more upon subjective symptoms than upon physical signs. The symptoms are likely to be vague and easily mistaken for one of many benign conditions. Generally, they are the symptoms of a mild meningeal irritation or an encephalitic involvement.

Headache is an almost constant early complaint. A persistent headache in a known syphilitic should always prompt a lumbar puncture and, when encountered in a new patient, should lead to blood and spinal fluid studies. Other early symptoms which should create suspicion and demand a spinal fluid examination are vertigo, nausea, vomiting, failing vision, diplopia, tinnitus, neurasthenia and mental confusion.

While we are largely dependent upon symptomatology and spinal fluid changes for the diagnosis of early syphilis of the nervous system, definite neurological and mental signs usually are at hand to help in the detection of late neurosyphilis, owing to permanent and often irreversible pathologic changes in the central nervous tissue. Pathologists have, for the sake of convenience, classified neurosyphilis according to the location of its pathologic process. *First*, meningeal, which designates the pathology of early neurosyphilis, both with and without symptoms. *Second*, cerebro-vascular, as represented clinically by aphasia and paralyses. *Third*, parenchymatous, characterized by destruction of nerve cells of the cerebral cortex and posterior spinal ganglia, producing the clinical pictures of paresis or tabes-dorsalis. The *fourth* classification represents variable combinations of the above three — for instance, meningo-vascular or meningo-vascular-parenchymatous — which are clinically called cerebro-spinal syphilis.

The symptomatology of neurosyphilis does not always correspond with this pathological classification, because many important symptoms may be common to more than one type. Therefore, for clarity, it is best to discuss the symptoms of neurosyphilis in general.

Headache, as in early neurosyphilis, is likewise common in late neurosyphilis. It is usually boring and severe, often worse at nights, either generalized or localized deep in the eyes, and at times associated with dizziness and vomiting.

Convulsive seizures are common in cerebro-spinal and paretic syphilis, and rarely may appear within a few months after infection in precocious cases. They may range from generalized convulsions and Jacksonian seizures to petit mal attacks with preservation of consciousness. No epilepsy should be branded "essential" without a spinal fluid study.

Personality changes and neurasthenic symptoms should always be considered as possible prodromes of cerebral syphilis. The distinction from true neurasthenia may be hard to draw and, considering the large number of neurasthenics in private practice, it would be unwise to perform spinal punctures on them all. Yet, because of the seriousness of allowing early paresis to progress untreated, every patient with a nervous breakdown in middle life should have a careful history, thorough physical and neurological examination and blood serology test. Often neurasthenic syndromes are labeled as "overwork," "nervous breakdown", or simply as a "neurosis", whereas a complete physical examination may reveal a sluggish pupil, an optic neuritis or a positive blood serology. After a thorough study of the neurasthenic has been made and no economic, social or spiritual cause is uncovered, or if the history or examination suggests syphilis, a spinal fluid examination is then indicated.

Personality changes, or what has been termed a "conduct slump", may precede by months or years the ultimate dementia or paresis. Egotism, expansiveness, carelessness of appearance, speculative spending and change from conservatism to radicalism are characteristic of the paretic but may be overlooked due to their insidious appearance. Sexual laxity, persecutory ideas, depression, exaltation, or violence may make paresis simulate almost any major psychosis. Speech disorders, especially a slurring of words or transient aphasia, often are the first recognized signs of paresis.

Sharp, stabbing, lightning-like pains are a common symptom in neurosyphilis. They may follow the spinal nerves or may be spotlike, hitting in succession several parts of the body. "Rheumatism" is too often the diagnosis which is made to cover this symptom. Fleeting sensations of burning, tingling and numbness may shift from place to place. Transient parasthesias are always suggestive of neurosyphilis. One of the first warnings of tabetic neurosyphilis is loss of bladder control. Owing to impairment of innervation, the bladder musculature becomes atonic and dilated, resulting in retention, overflow, and "dribbling". Oftentimes these symptoms are wrongly blamed on an enlarged prostate. Disappearance of libido occurs in about 30 per cent of cases of neurosyphilis.

Syphilitic meningitis, through damage to the cranial nerves, gives rise to eye symptoms and signs. Ptosis of one lid, diplopia and strabismus are not uncommon findings. Failing vision often results from primary optic atrophy, which should be determined by ophthalmoscopic and perimetric examinations. Is the Argyle-Robertson pupil absolutely diagnostic of neurosyphilis? Nonne concludes that a pupil which is fixed to light but reacts to accommodation points to syphilis in nearly every case. Though there may rarely be other causes than neurosyphilis, finding of such a pupil absolutely indicates serologic and spinal fluid studies.

In the diagnosis of early neurosyphilis there are certain objective signs which are valuable. Sensory changes, especially analgesia to pin-prick, impairment of vibratory sense, and loss of the sense of motion and position are often the earliest warnings of sensory root involvement. As the sensory roots become more injured the advanced tabetic is produced, with a positive Romberg test, slap-foot gait, and absent tendon reflexes. Hemiparesis, spastic gait, ankle clonus, positive Babinski, and hyper-active reflexes may indicate a syphilitic process of the brain or spinal cord.

Just how reliable are the blood and spinal fluid serological reactions in the diagnosis of neurosyphilis? The blood serology is estimated by various syphilologists as being positive in only 50 to 60 per cent of tabetics; but in paresis it is usually accepted as positive in 90 to 100 per cent. Although a positive spinal fluid serology is to be expected in 100 per cent of paretics, negative results are occasionally found in cases of meningeal, vascular and gummatous neurosyphilis.

The colloidal tests are not as valuable for diagnosis as they are for prognosis. A first zone, or so-called "paretic curve", is not pathognomonic of paresis. The diagnosis of neurosyphilis depends, therefore, not on any one single finding, but must be made from the history, clinical findings, blood and spinal fluid serology, colloidal test and cell count.

Treatment

The treatment of neurosyphilis is still in a state of change and development. Syphilologists who report on the results of treatment of large groups of clinic patients show varying, and even contradictory results. Not all workers agree on the relative values of the various forms of therapy in common use. It is, therefore, impossible to present all the forms of treatment which have been and are being employed in treating the various phases of the disease. In appraising the results of treatment of syphilis of the nervous system, it is well to use the accepted pathological classification.

First, in *asymptomatic neurosyphilis* the results of treatment depend on the severity of the spinal fluid reaction. The Cooperative Clinical Group(3) reports a reversal of the milder types of spinal fluids to negative in 84 per cent of cases, while in those cases with a first zone curve only 45 per cent were reverted to negative, remaining negative for ten years or more. Routine treatment consisted of intensive use of arsphenamine and bismuth or mercury. In those cases which were resistant to routine therapy, tryparsamide, therapeutic malaria, or intraspinal therapy was used. Each of these three additional methods resulted in a reversal of spinal fluids in from 25 to 75 per cent of cases resistant to chemotherapy.

Secondly, in *early meningeal neurosyphilis*, Stokes and Shaffer(4) urge intensive treatment with arsphenamine and a heavy metal, with longer courses of the former and no rest periods. They obtained good results clinically and serologically in 91 per cent of cases. O'Leary(5) treats those of this group who have paretic curves by supplementing the chemotherapy with malarial therapy.

Thirdly, in *vascular neurosyphilis* results of treatment are discouraging. Stokes and Shaffer obtained good results in only 38 per cent of treated cases. The prolonged use of neoarsphenamine, heavy metals and iodides is recommended. Tryparsamide has produced favorable results, though it is stated that malarial therapy is hazardous for these patients.

Fourth, *late meningo-vascular syphilis* responds comparatively well to therapy, as shown by Moore(6) who treated 88 cases at Johns Hopkins Hospital. Good results, clinically and serologically were obtained in 62 per cent of cases. Tryparsamide, heavy metals and iodides are used in this type of the disease. Malarial therapy is of considerable use in those cases resistant to chemotherapy, and intra-spinal treatment was at one time being widely used.

Fifth, the results of treatment of *tabes dorsalis* are difficult to appraise, because the symptoms are so multiform, and clinical improvement does not parallel serologic improvement. O'Leary(7) reports a series of 630 cases of tabes. Chemotherapy, consisting of tryparsamide, bismuth and iodides, produced serologic reversals in 64 per cent and excellent clinical results in only 26 per cent. Malarial therapy arrested clinically 26 per cent of those cases in which routine treatment had failed, especially in cases of gastric crises, lightning pains and optic atrophy. Fordyce(8) reported excellent results in 50 per cent of tabetics treated by the Swift-Ellis intraspinal method.

Sixth, *paresis* shows little response to arsphenamine, bismuth, or mercury when used alone. Moore(9) obtained good clinical results in 57 per cent of early paresis treated by tryparsamide, though only 28 per cent showed a good serological result. Among the more advanced institutional cases malarial therapy, followed by tryparsamide courses, causes complete remissions in about 35 per cent of cases and partial remission in about 30 per cent. Wagner von Jauregg(10) states that if only early cases of paresis are treated, malaria will give 100 per cent good results. Malarial therapy is undoubtedly of more value in cases in which there are no clinical signs of paresis, but in which a paretic spinal fluid persists in spite of intensive chemotherapy. Malarial therapy can, therefore, be regarded as of great value in the prevention of clinical paresis. The production of febrile reactions by means of typhoid vaccines is useful.

A few words regarding the action of tryparsamide are in order. This drug has been shown not to be spirillicidal, therefore having no field of use in early syphilis. Its exact action is not known; it is thought to stimulate the immunity and resistance factors of the body. Stokes(11) thinks it penetrates nerve tissue. Tryparsamide is valuable in the treatment of paresis, tabes dorsalis, meningeal neurosyphilis and meningo-vascular neurosyphilis. It has special merit in the treatment of late neurosyphilis following or accompanying malarial therapy. It is now believed that, in order to accomplish as much serologic as clinical improvement, mercury or bismuth, iodides, or even arsphenamine, should be given also. The average dose of tryparsamide is about 3 Gm. in 10 cc. of sterile, distilled water, given at weekly intervals for eight to sixteen weeks, followed by a rest period of four to six weeks. Many

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3. O'Leary, P. A.; Cole, H. N.; Moore, J. E.; Stokes, J. H.; Wile, U. J.; Parran, Thomas; Vonderlehr, R. A.; Usilton, Lida J.: Cooperative Clinical Studies In the Treatment of Syphilis: Asymptomatic Neurosyphilis, Ven. Dis. Inform. 18:45 (March) 1937.
4. Stokes, J. H., and Schaffer, L. W.: Syphilis, J. A. M. A., 88: 1820, 1924; ibid., 85: 1271, 1025.
5. O'Leary, P. A., and Welsh, A. L.: The Treatment of Neurosyphilis with Malaria, Observations on 984 Cases in the Last Nine Years, J. A. M. A. 101: 498-501 (Aug. 12) 1083.
6. Moore, J. E.: The Modern Treatment of Syphilis, Baltimore, C. C. Thomas, 1933.
7. O'Leary, P. A.: Present Day Status of the Treatment of Neurosyphilis, J. A. M. A. 109: 1163-1169 (Oct. 9) 1937.
8. Fordyce, J. A.: Syphilis, Brit. Jour. Dermat., 36: 17, 1921.
9. Moore, J. E.: The Modern Treatment of Syphilis, Baltimore, C. C. Thomas, 1933.
10. Wagner von Jauregg, Julius: Ueber die Einwirkung der Malaria auf die progressive Paralyse, Psychiat-neuroe. Wchnschr. 20: 132-134 (Aug. 31) 1918.
11. Stokes, J. H.: Modern Clinical Syphilology, Philadelphia, W. B. Saunders Co., 1928, p. 131.

such courses may be necessary. During tryparsamide therapy, any subjective ocular symptoms should prompt careful study of the visual fields.

How long should the treatment of neurosyphilis be continued? Some specialists attempt to treat their patients for one year after the blood and spinal fluid have become and remained completely negative. But, may not this attitude at times overlook the welfare of the patient in an attempt to combat the disease? The primary aim of treatment in neurosyphilis is to restore the patient to a state of physical and mental well-being, and to maintain this state as permanently as possible. Ordinarily, continuation of treatment for a reasonable time after the patient is clinically well, in order to keep the spinal fluid negative is wise practice. However, it is not within the aim of treatment to reverse a spinal fluid serology at the expense of the rest of the man. The undoubted answer is that careful individualization of each patient should be observed. His age, life expectancy, his work, his desires are as much a part of the handling of his individual case as are his symptoms or his positive spinal fluid serology.

From the above principles of diagnosis, methods of therapy, and results of treatment we may conclude the following: The earlier neurosyphilis is diagnosed and adequately treated, the more favorable will be the outlook for the patient.

A PRELIMINARY REPORT OF AN ANALYSIS OF THE DEATHS AMONG INDIVIDUALS WITH SYPHILIS IN NORTH CAROLINA DURING 1938

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North Carolina State Board of Health

The determination of the actual mortality rate for syphilis is practically impossible from data available on death certificates. This in a large measure is due to the protean nature of the disease, which causes it to present such varied clinical pictures that it is able to masquerade as many other diseases. Even when syphilis is recognized its actual relationship to death may remain undiscovered. For example, the report of the Register-General of Great Britain in 1915 placed syphilis as the tenth among killing infections; however, Osler upon analyzing the report found that syphilis actually ranked first. His deduction was reached by estimating 18.4 per cent of all central nervous system deaths and 13.4 per cent of all cardiovascular deaths as caused by syphilis(1). Diseases of these two structures are responsible for the majority of syphilitic deaths.

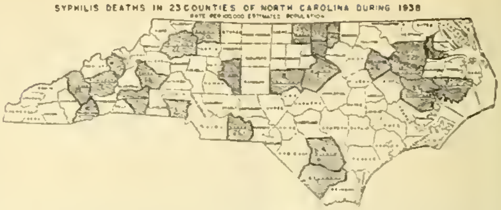
SYPHILIS DEATHS IN 23 COUNTIES OF NORTH CAROLINA DURING 1938
RATE PER 100,000 ESTIMATED POPULATION

Fig. 1. Shaded areas represent health jurisdictions cooperating in study. Morbidity rates among syphilitics per 100,000 of general population are indicated for each area studied.

The material used in this study was collected through the cooperation of twenty-four health departments of this state. As seen in Figure 1, the distribution included representative areas of the state. Each death which occurred in these areas during 1938 was investigated for the presence or absence of syphilis by the health officer. The investigation was confined to the examination of laboratory and medical records and, in certain cases, an interview with the private physician who took care of the patient. It consisted of 176 cases; 41 per cent were white and 59 per cent colored. The sex was also about equally divided; 59 per cent were males and 41 per cent females. Slightly more than half of the cases were under thirty years of age.

In this study the death rate among syphilitics from all causes was 16.1 per 100,000 of the population. It is obvious from Figure 1 that marked variations existed in this rate. This death rate fluctuated in these various health jurisdictions from 2 to 65 per 100,000 population. Among the factors responsible for this marked variation were the location of the state institution for the insane, the availability of medical and laboratory data, and the enthusiasm of the investigator to "ferret out" syphilis.

Read before the Second General Session of the Medical Society of the State of North Carolina, Bermuda Cruise, May 13, 1939.

1. Moore, J. E.: The Modern Treatment of Syphilis, Charles C. Thomas, published 1933.

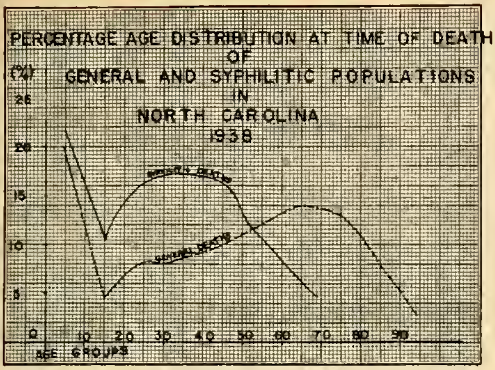

Fig. 2

DEATHS FROM ALL CAUSES IN NORTH CAROLINA

Age by Years	Among the General Population Number	Among the General Population Percent.	Among the Population With Syphilis Number	Among the Population With Syphilis Percent.
0-9	7,227	20.0	36	20.2
10-19	1,621	4.5	15	8.5
20-29	2,954	8.2	33	18.8
30-39	3,065	8.6	28	16.1
40-49	3,583	10	29	16.5
50-59	4,353	12.1	19	10.8
60-69	4,944	13.8	12	6.8
70-79	4,608	12.8	4	2.3
80-89	2,723	7.6		
90+	820	2.3		
TOTAL	35,898	100.0	176	100.0

Figure 2 shows the age distribution of deaths among syphilitics as compared with those among the general population of North Carolina. Over half of these syphilitics were dead before they reached thirty years of age, whereas, among the general population, one-half are dead by forty-five years of age. Because an occasional patient reached seventy, the average age at death of these patients with syphilis was thirty-eight years as compared with fifty years for the general population; thus, the lives of these individuals with syphilis were shortened about 24 per cent.

The fatality rate at each age of life up to fifty is consistently higher for a given syphilitic population than for the general population (Fig. 2). None of the individuals in this study survived beyond seventy; whereas, among the general population, 22.7 per cent survived beyond this age limit.

It is appreciated that the age distribution of mortality among the syphilitics in this study is biased by the fact that detectable syphilis is largely dependent upon finding a positive Wassermann reaction. In addition, the older the population groups studied beyond the peak incidence of the disease, the less likely one is to find detectable syphilis by the Wassermann test. This decrease in detectable syphilis is, of course, due to reversals of the Wassermann test either spontaneously or as a result of treatment. As was shown (Fig. 3) by Vonderlehr and Usilton(2), approximately one-third of the total syphilitic population have a negative Wassermann by the age of forty. This becomes of paramount importance to the physician when it is appreciated that 23.8 per cent of individuals dying of cardiovascular syphilis had a negative Wassermann in a series studied by Reid(3) of Boston. Had all the deaths among syphilitics been included in this study, it is very likely that the mean age at death would have approached closer the death rate of the general population.

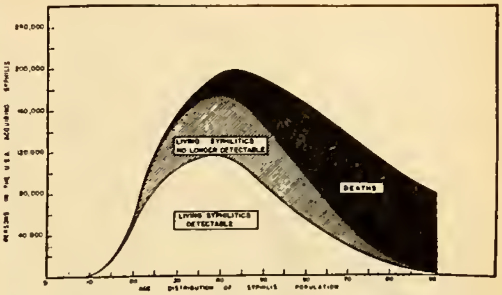

Fig. 3. Age distribution of all people in a given population who have ever had syphilis separated according to whether they had detectable syphilis (i. e. positive Wassermann), non-detectable syphilis (i. e. negative Wassermann) or whether they were dead. By permission from Vonderlehr and Usilton of U. S. P. H. S.

Based upon the observed fact that the average syphilitic acquired his disease at about twenty-two years of age, from this study it may be deduced that a person with syphilis lives approximately sixteen years after the onset of his infection.

An analysis of the cause of deaths among 162 of the cases reported reveals 57.5 per cent of these deaths may have been directly or indirectly due to the activity of the treponema pallidum and 42.5 per cent to other causes. (Fig. 4). Moore states that the greatest single cause of death from acquired syphilis is cardiovascular syphilis. Diseases of the circulatory system in this study accounted for 12.2 per cent of the deaths. This is approximately one-half higher than the

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2. Vonderlehr, R. A. and Usilton, Lida J.: The Chance of Acquiring Syphilis and the Frequency of Its Disastrous Outcome, Venereal Disease Information 19:396, 1938.
3. Reid, W. D.: The Diagnosis of Cardiovascular Syphilis. Analysis of Clinical and Postmortem Findings, Am. Heart J. 6:91, 1938.

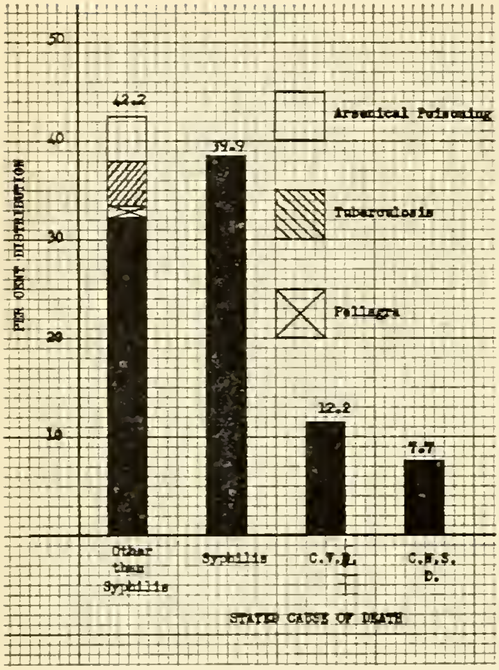

Fig. 4

DISTRIBUTION OF 162 DEATHS AMONG SYPHILITICS ACCORDING TO THE STATED CAUSE OF DEATH

Stated Cause of Death	*Deaths Among Syphilitics* *Number*	*Percent.*
Other than Syphilis	52	32.1
Arsenical Poisoning	7	4.3
Tuberculosis	8	4.9
Pellagra	2	1.2
Syphilis Lesion not Stated	62	38.3
Cardiovascular Diseases	19	11.8
Central Nervous System Diseases	12	7.4
TOTAL	162	100.0

rate in the general population for this cause. Central nervous system diseases accounted for 7.7 per cent of the deaths among syphilitics.

Among 38.3 per cent of the cases in this series, syphilis was stated as the cause of death, but no clue was given as to the actual vital structure involved. In a disease which may affect every structure in the body this sort of a diagnosis allegorically suggests such a dissolution of the human body as was applied by that renowned physician-poet, Oliver Wendell Holmes to the famous "one-hoss shay." Such massive destruction of vital structures not infrequently occurs among the unborn during the last trimester of an untreated syphilitic pregnancy; however, in adults the pathological processes are exceedingly patchy—destroying areas in the aorta in some cases and certain tracts and regions of the central nervous system in others.

Among the causes of death other than those attributed to syphilis, tuberculosis and arsphenamine dermatitis were the most frequently observed. As tuberculosis and syphilis are notably diseases of the lower socio-economic levels of society, they are probably very frequently associated in the same patient; however, there are not sufficient cases available in this study to draw conclusions on this point.

Arsphenamine poisoning was indicated as responsible for 4.3 per cent of the deaths. This rate is obviously excessive when compared to that of Stokes, who has had only two arsphenamine deaths in eight years on his service in Philadelphia.

Conclusions

1. One-half of the annual deaths among syphilitics occurred before thirty years of age, as compared with forty-five years of age for the general population.

2. Lives of individuals with syphilis are shortened about 24 per cent.

3. The average patient died within sixteen years after acquiring the disease.

4. Approximately twice as many people in the syphilitic population die of cardiovascular disease as in the general population.

Laboratory and Clinician.—Much hospital laboratory work may be regarded as of indirect significance for the individual patient, but aimed at the training of better clinicians. When, as sometimes happens, it results in the production of poor clinicians, unable to interpret disease except through the eyes of the laboratory, its purpose has failed, and failed seriously.—Francis W. Peabody: Doctor and Patient, New York, The Macmillan Co., 1939.

Indiscriminate Laboratory Examinations.—In the hospital all manner of tests can readily be performed in obscure or doubtful cases, but in private practice the economic factor usually restricts one to the tests which most obviously offer practical assistance. Fortunately, however—and this is apparently contrary to much present-day opinion—good medicine does not consist in the indiscriminate application of laboratory examinations to a patient, but rather in having so clear a comprehension of the probabilities and possibilities of a case as to know what tests may be expected to give information of value.—Francis W. Peabody: Doctor and Patient, New York, The Macmillan Co., 1939.

ARTIFICIAL RUPTURING OF THE MEMBRANES AS A METHOD OF INDUCTION OF LABOR

JOHN C. TAYLOE, M.D.
WASHINGTON, N. C.

This is not a new method of induction of labor; for, on reviewing obstetrical literature, we find that this method was first used in 1756, by an English mid-wife, Mary Donally, who achieved the delivery of a live baby from a mother with a contracted pelvis who had previously been delivered of two full term, still-born babies. Also, in 1783, the first physician to perform this simple operation was a Dr. Maculay, who ruptured the membranes on a similar case, and achieved the birth of a live baby from a mother with a similar history.

At the present time there are two theories as to what causes the dilatation of the cervix. One, the Hydrostatic Wedge Theory, states that the bag of water is the dilating agent, acting as an even dilator on the cervical canal. The other theory, advanced by Dewees in 1806, states that as the longitudinal muscle in the uterus contracts, the circular fibers relax and thus the cervix is dilated and pulled up over the presenting part. This theory also states that the membranes and liquor amnii act only as a lubricant and protecting agent for the baby.

Those of you who, in the past, have used bags and bougies to induce labor have found that they did not, in all cases, induce labor; that there is a higher fetal mortality connected with their use; and that the maternal morbidity is higher. Morton(1), in a study of 132 cases of bag and bougies induction at Johns Hopkins Hospital, reports a fetal mortality of 32 per cent and a febrile puerpura in 33 per cent of cases. His report has been confirmed by other physicians—among them, Moore at the Presbyterian Hospital in Charlotte.

A simple, easy and efficient method of inducing labor is by artificial rupture of the membranes. This is a valuable therapeutic procedure for several reasons:

(1) It is the easiest method. It is a very simple operation and is done without the aid of anesthetics and without special apparatus.

(2) The danger of infection is no greater than from an aseptic vaginal examination, and it has the cleansing effect of the liquor amnii afterwards as a safeguard.

(3) It is not necessary to have a foreign body (bag or bougie) in the uterus for twenty-four hours.

(4) To a certain extent it imitates nature, as it is similar to those cases which have spontaneous rupture of the membranes.

(5) It is sure to induce labor.

In introducing any therapeutic procedure it is necessary to take into consideration the indications and contraindications for its use. I have found it most useful in cases of toxemia of pregnancy which show no improvement under medical care, and those with convulsions. Other indications to its use are marginal placenta previa, post maturity, abruptio placenta, dysentery, and fibroids. I have used it also in patients with moderately contracted pelvis who had had difficult labor with full term, still born children, and in one case of habitual death of the fetus between the ninth and tenth month of pregnancy. The contraindications to this procedure have been marked contraction of the pelvis and malposition, and cases where a surgical operation has been performed on the cervix.

During the past four years this method of inducing labor was used on 59 multiparae and 52 primiparae. Of this series of 111 cases there was one maternal death in a patient with severe eclampsia who had had no prenatal care. There were five fetal deaths—four from toxemic mothers, and one a still birth from a mother who had premature separation of the placenta. Upon analysing these 111 cases we find that the latent period—the period from the time the membranes were ruptured until the labor pains started—was found to average around three and a third hours; in the primiparae the shortest time was fifteen minutes; the longest, eight and one-half hours. The average length of labor in the primiparae was ten hours and thirty-eight minutes. In the multiparae, the latent period averaged about three hours. The longest latent period in multiparae cases was twelve hours and thirty minutes; the shortest, twenty minutes. The average length of labor in the cases of multi-

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Read before the Section on Gynecology and Obstetrics, Medical Society of the State of North Carolina, Bermuda Cruise, May 10, 1939.

1. Morton, D. G.: Comparison of Results Obtained in Induction of Labor by Means of Bougie and Bag, Am. J. Obst. and Gynec. (December) 1929.

parae was seven and one-half hours. The longest latent period was found in the cases that were furthest from maturity. Pituitrin in small doses was used in cases with the longest latent periods. All of these patients had their membranes ruptured in the hospital, and 95 per cent were delivered there. The other 5 per cent were allowed to go home after remaining in the hospital until labor had started and the presenting part was well down in the pelvis. Williams of Johns Hopkins, and DeLee of Chicago said that in all types of labor in a large series of cases the average length of labor for a primipara was seventeen and one-half hours, and for a multipara, thirteen hours. From statistics in my small series of cases, and from statistics reported from King(2), Broadhead, Macher, Bradford(3), Wilson(4), and Plass(5), these figures for the average time of labor in primiparae and multiparae were reduced 25 per cent, at least.

Technique: The patient is given a cleansing enema at 8:00 a. m. The pubic hair is shaved and the pubic region washed with soap and water. The pubic region and external genitalia are painted with 4 per cent mercurochrome, and one ounce of 4 per cent solution of mercurochrome is injected slowly into the vagina with a urethral syringe. The membranes are then ruptured, using aseptic technique, with a pair of long dressing forceps or any blunt instrument. The head is pushed up by the hand in the vagina, and as much of the liquor amnii is allowed to escape as will. No anesthetic is required.

The objections to this method of induction of labor have been that it causes more intracranial hemorrhages in infants, and that more damage is done to the cervix without the hydrostatic wedge, and that there is the danger of a prolapsed cord. King(2) has shown in a large series of cases that these conditions do not occur any more than if labor goes on with the membranes intact. Obstetrical morbidity is about the same as in those cases that go through labor with the membranes intact. There were no cases of infection in my small series. About 10 per cent of them ran a temperature around 100 from two to three days. Prolapse of the cord was not present in any of my cases, but one case did have a prolapsed arm on which a version and extraction was done, successfully. There were no cases of intracranial hemorrhages in my series.

Artificial rupturing of the membranes is not recommended as a routine procedure in every obstetrical case, but it is recommended as a safe, sure and efficient method of inducing labor when induction of labor is indicated.

Discussion

DR. J. STREET BREWER (Roseboro): It is interesting to me to recall that when I was in medical school, we were taught to keep the membranes intact as long as possible because premature rupture of the membranes would slow up labor. In later years, I think we have learned that such is not the case. My experience is that labor progresses just as well after it starts when the membranes have been prematurely ruptured.

Labor should not be hard and vigorous, particularly when there is a long latent period. Labor may start with a great deal of vigor. I think if something is not done to slow down this type of labor a little you are likely to get intracranial damage. I believe a proper thing to do, in those cases where labor starts off vigorously before you have dilatation of the cervix is to give some sort of a sedative so that the pains may not be very strong and the patients will not strain in bearing down until there has been a good deal of effacement and dilatation of the cervix. In that way you lessen the trauma to the baby's head.

In that connection, I would remind you that, since most of these cases we are dealing with are premature infants, you have to be a little careful of the administration of morphine to tone down these labors. I prefer the use of the barbiturates.

Emotional Manifestation.—Although the physical manifestations of embarrassment such as blushing have long been recognized, the analogue of blushing which might be exhibited in palpitation or in spastic colitis as a result of emotional factors was overlooked. So much attention was focused upon the gastro-intestinal and circulatory tract that it was forgotten that they were parts of an individual who was perhaps expressing in this particular way and by these particular symptoms his emotional conflicts.—Winfred Overholser: The Broadening Horizons of Medicine, Science, 90: 2338 (Oct. 20) 1939.

Informing the Public. — Not only the material benefits from modern knowledge, but the science man's way of working need to be more fully understood and more widely used. Pasteur did little arguing. He presented truth and demonstrated the meaning of truth. He withheld nothing for himself. He sometimes expressed regret that so many uninformed people could not, or did not, wish to understand, but he found encouragement from those who did understand.—Caldwell, Otis W.: Some Problems of an Educated Minority, Science 89: 2322 (June 30) 1939.

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2. King, A. G.: Cervical Dilation in Dry Labor and after Deliberate Early Rupture of the Membranes.
3. Bradford, W. Z.: Induction of Labor by Rupture of Membranes, South. Med. and Sur. (November) 1933.
4. Wilson, Leo: Induction of Labor by Rupture of the Membranes, Am. J. Obst. and Gynec., (February) 1934.
5. Plass, E. D. and Seibert, C. W.: Premature Rupture of the Membranes as a Means of Inducing Labor, Am. J. Obst. and Gynec. (November) 1936.

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THE PREPARATION OF MANUSCRIPTS

With the state meeting only two months off, those who are on the program will soon be preparing their papers. In the desire to lighten our editorial task a bit and to achieve greater uniformity in future issues of the North Carolina Medical Journal, we are offering in this issue a few suggestions for the preparation of a manuscript. Most of them are taken from Dr. Fishbein's book, Medical Writing, which we heartily recommend to anyone attempting to prepare a medical paper.

Manuscripts should be typed on standard size typewriter paper, double-spaced, and with liberal margins. Pages should be numbered, and part of the title should appear at the top of each page.

The full title of the paper, the author's name with his degrees (M.D. and higher degrees) and his address should be at the top of the first page. If the paper is from a medical school or hospital, the full name of the institution and the department should be given in a footnote at the bottom of the first page, along with the section and meeting to which the paper was presented, and the date of presentation. The form should follow that used by the North Carolina Medical Journal.

References to books and articles, and any footnotes of the author's, should be typed, double-spaced, on a separate page at the end of the manuscript, numbered consecutively with the pages in the text. The bibliographic form and abbreviations used in the *Journal of the A. M. A.* and given in Dr. Fishbein's book should be followed exactly. Books and articles not referred to in the text should not be included, unless a complete bibliography of the subject is given.

Legends for illustrations, and tabular matter should be typed on separate sheets of paper, numbered with the text.

Except in tables, few abbreviations are permitted. When there is any doubt, it is always best to spell out terms. The sign % is used only in tables. In text matter, "per cent" is correct. The word "x-ray" is spelled with a small "x". For rules on abbreviation, spelling, and numerals in medical writing, Dr. Fishbein's book is the most authoritative source.

Case reports should be written with the same care that is given to other articles. Dr. Fishbein says: "A case report should tell its story in clear, straightforward narrative style. It should not be transcribed word for word from original records that were hastily jotted down at the time the various events occurred; the jerky, telegraphic style of the record sheet may result in actual padding." All irrelevant findings should be omitted, and the tenses should be consistent. Care should be taken to avoid confusion of dates.

When the paper has been typed, the author should re-read it carefully, checking on spelling and grammar. Corrections should be written between the lines in ink, *legibly*, if possible!

The North Carolina Medical Journal, like most state journals, has been forced to adopt the policy of asking authors to pay for their illustrations. It will save expense to the author if he will omit all illustrations which do not add directly to the value of the paper. Our engraver makes his rate as reasonable as possible. If he so desire, the author will be notified as to the cost of his cuts before they are made. The statement for the cuts will be sent directly from the engraver to the author.

NORTH CAROLINA'S VITAL STATISTIC FOR 1939

The vital statistics figures for 1939, recently released by Dr. Carl V. Reynolds, are, for the most part, distinctly encouraging. The death rate for the entire population is the lowest yet recorded—9 per 1000, as compared with 9.5 in 1938. This represents a saving of 1,911 lives. The infant mortality dropped from 68.3 per 1000 live births in 1938 to 58.5 in 1939. Translated into lives, 757 more babies survived last year than in the year before. In comparing this infant mortality with that of some other states, it should be remembered that the negro population in North Carolina is 29 per cent, as compared with the national average of 10 per cent; and that the infant mortality is much higher in the colored than in the white race.

The maternal death rate per 1000 live births dropped from 5.6 to 4.8—comparing favorably with the last national rate recorded, in 1937, of 4.9. This means a saving of 67 mothers during the year.

"Last year saw the saving of 357 lives of children under 2 years of age in North Carolina from death from diarrhea and enteritis, the rate falling from 29.2 to 18.9 between 1938 and 1939."

The pneumonia death rate declined from 76.8 to 61, saving 537 lives. With the further use of sulfapyridine—released for general use last March — there should be a much greater saving of lives. An article in the *Pennsylvania Medical Journal* for February, summarizing the results in nearly 3000 reported cases treated with sulfapyridine, gives the mortality for all types and ages as only 7 per cent.

The most humiliating figures in the report record 173 deaths from diphtheria, with a rate of 4.9, as compared with 176 deaths and a rate of 5 the preceding year—a negligible decrease. It is to be hoped that the diphtheria immunization law enacted by our last legislature—thanks to our most efficient Secretary-Senator, Dr. T. W. M. Long—will do much to improve this disgraceful showing. Still more important, however, is that the family doctors and pediatricians of the state redouble their efforts to have all babies under their care immunized before they are a year old.

SULFAPYRIDINE VS. SERUM IN LOBAR PNEUMONIA

In an incredibly short time after its introduction sulfapyridine has been widely accepted as our most useful means of combatting pneumonia. The ease with which it can be administered, the fact that it is bacteriostatic for all types of the pneumococcus, its rapid action, and its relatively low danger compared with that of the disease itself, appeal both to the profession and to the public. In spite of all these advantages, however, over the greater expense and more complicated technique of type-specific serum, the latter has its strong advocates, and at times the debate becomes rather acrimonious.

Mason and Stocklen(1) have recently published the result of the fairest possible comparison of the two forms of treatment. In the Cleveland City Hospital, from February 1 to May 1, 1939, a series of 66 adult patients with lobar pneumonia were treated, giving alternate cases serum and sulfapyridine respectively, "except in some instances in which typeable pneumococci were not found in the sputum or by lung suction. The patient was then given sulfapyridine."

"Typeable pneumococci were found in 72.7 per cent of the cases. In the others, hemolytic streptococci, green streptococci, pneumococci that did not type, and mixed flora were recovered." Three cases of Type III pneumococcus were found in each group.

"Sulfapyridine was approximately twice as effective as serum in producing defervescence by crisis. In 37 per cent of the cases treated with serum, fever subsided by crisis, compared with 73 per cent in the sulfapyridine treated cases.

"Length of hospitalization was definitely shorter in the group of patients receiving sulfapyridine. Serum treated cases averaged 19.3 days in the hospital as compared with 15.9 for those treated with sulfapyridine."

The average cost of the serum used for each patient was $70.07; of the sulfapyridine, $3.03.

In the serum treated group there were six deaths—a mortality of 18.2 per cent; there were no deaths in the sulfapyridine group.

If not the first, this is certainly one of the first reports in which, under conditions as nearly as possible similar, alternate cases

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1. Mason, Ulysses G. and Stocklen, Joseph B.: A Comparative Study of Serum and Sulfapyridine in the Treatment of Lobar Pneumonia, Ohio State M. J. 36:177 (Feb.) 1940.

were treated by serum and sulfapyridine. The result speaks eloquently for the efficiency of sulfapyridine.

In the *New York State Journal of Medicine* for February, Kaufman(2) reports a series of 81 cases of old age pneumonia (both lobar and broncho-) treated by sulfapyridine. The patients' ages ranged from 60 to more than 90, and the series included 13 Type III cases. There were 19 deaths in the group—a mortality of 23.5 per cent. "But it has to be considered that almost all these patients had some cardiovascular disease, that the previous death rate used to be 75 per cent, and that there was no selection of the cases." In discussing the question of serum vs. sulfapyridine, Kaufman concludes that: "If one considers the severe strain of serum therapy in old age pneumonia sulfapyridine has a wider field of application than serum therapy."

On the other hand, sulfapyridine has a disagreeable habit of producing renal calculi in a certain number of cases. Most of us, if we ourselves had pneumonia, would probably be willing to take the possible future risk of a kidney stone if thereby we could reduce by 75 per cent our chances of acquiring a tombstone. It should be remembered, however, that both sulfanilamide and sulfapyridine should be reserved for real need and not be used indiscriminately for minor ailments.

(2) Kaufman, Paul: Effect and Toxic Effects of Sulfapyridine in Old Age Pneumonia, New York State J. Med. 40:204 (Feb. 1) 1940.

* * * *

THE "COMMON COLD"

Much has been written but little has been learned about the "common cold". A recent study(1) of several groups of school children has brought to light some hitherto unsuspected relationships between the "common cold" and communicable disease. It was found that, following exposure to such diseases as scarlet fever, measles and chickenpox, there would be a sharp peak of upper respiratory symptoms among these children, occurring near the end of the respective incubation periods. In one class of 37 pupils 11 children were absent with colds following exposure of the class to a mild case of scarlet fever the previous week. The rest of the classes in this school were having excellent attendance with very few colds.

The evidence put forward suggests that the etiologic agents of various communicable diseases may manifest their presence more frequently than is recognized by symptoms usually thought of as those of the common cold. There is nothing strange in this idea, as it has long been recognized that there are a large number of abortive and missed cases in all epidemics. Many so-called "colds" may in reality be missed cases of communicable diseases. If this should prove to be true, it should be possible to cut down the incidence of colds, by attention to fatigue and weather exposure following exposure to a communicable disease.

The fact that a virus has been indicated as the cause of the "common cold" does not eliminate other agents. All that has been demonstrated is that a certain virus can produce cold-like symptoms, and to consider it the only causative organism would be highly dangerous. The conception that upper respiratory infections may and probably do have a variety of causes has manifold hygienic and public health implications.

1. Turner, Naomi C.: Common Colds, New England J. Med. 222:184 (Feb. 1) 1940.

THE PLATFORM OF THE AMERICAN MEDICAL ASSOCIATION

1. The establishment of an agency of the federal government under which shall be coordinated and administered all medical and health functions of the federal government exclusive of those of the Army and Navy.

2. The allotment of such funds as the Congress may make available to any state in actual need, for the prevention of disease, the promotion of health and the care of the sick on proof of such need.

3. The principle that the care of the public health and the provision of medical service to the sick is primarily a local responsibility.

4. The development of a mechanism for meeting the needs of expansion of preventive medical services with local determination of needs and local control of administration.

5. The extension of medical care for the indigent and the medically indigent with local determination of needs and local control of administration.

6. In the extension of medical services to all the people, the utmost utilization of qualified medical and hospital facilities already established.

7. The continued development of the private practice of medicine, subject to such changes as may be necessary to maintain the quality of medical services and to increase their availability.

8. Expansion of public health and medical services consistent with the American system of democracy.

CASE REPORTS

DUKE HOSPITAL CLINICO-PATHOLOGICAL CONFERENCE

OCTOBER 18, 1939

Dr. Lamar Callaway (reading the clinical summary):

A forty-eight year old white man (Case A-25499) was admitted because of chills and fever during the preceding five months.

Family History: His paternal grandfather and great-grandfather both had heart trouble all their lives characterized by "double palpitations of the heart". They were both told that they had "leaking hearts."

Past History: His general health had always been good. He had influenza in 1919 and pneumonia in 1935. He had a Neisserian infection three years ago which resulted in urethral stricture requiring dilation every seven or eight weeks. The patient had noticed a thrill at the lower end of the sternum since early childhood, and at the age of eight years was told that he had a "leaking heart". The thrill and heart murmur had been noted frequently by physicians throughout his life, but he successfully passed three insurance examinations when he was twenty-four years of age.

Present Illness: Five months previously he had had a febrile illness, accompanied by cough and generalized muscular aches. He had a chill at the onset and another about one week later, and it was thought that he had malaria. The fever and chills persisted in spite of large doses of quinine. He had spent the month previous to admission in a nearby hospital, and while there was given three tablets of sulfapyridine three times daily for eight days. The chills ceased. Two weeks previous to admission he had experienced a sudden sharp pain in the lower right chest, associated with dyspnea and marked pain on deep inspiration. Three days later he coughed up bloody mucus. The pleuritic pain disappeared in a week. Ten days before admission he noted swelling of the feet, and several red, pin-point spots on the feet and ankles. He has lost about twenty pounds in weight.

Physical Examination: The temperature was 39.5°C., pulse 20, respiration 26. The blood pressure was 166/64 in both arms. The patient was fairly well developed and nourished and did not appear particularly ill. The respirations were a little rapid, but not difficult. Numerous petechiae were scattered over the feet and lower legs, and a few over the trunk and arms. Mucous membranes were pale. The teeth were very carious. Marked pyorrhea was present. Arterial pulsations were observed in the neck but there was no engorgement of neck veins. A thrill could be felt over the lower end of the sternum. The heart was moderately enlarged to the left. A loud, harsh, systolic murmur could be heard over the entire precordium and also over the posterior left chest, but best over the lower end of the sternum. Lungs were negative except for a few rales at both bases posteriorly. There was moderate abdominal distention but no shifting dullness, and no masses or organs could be felt. There was slight pitting edema over both feet and ankles; no clubbing of the fingers or cyanosis of the nail beds.

Accessory Clinical Findings: Hgb. 7.7 Gm. or 49 per cent; RBC 2,370,000; Color Index 1; WBC 11,680. Differential: PMN 95 per cent, of which 39 per cent were of the immature variety; LL 3 per cent; SL 1; M. 1; slight anisocytosis of the red blood cells. The sedimentation rate was 18 mm. per hour, corrected. Blood Wassermann and Kahn reactions were negative. Urine at the time of admission showed sp. gr. of 1.008, albumin 3 plus, and 20 RBC per high power field in the centrifuged sediment with a 4 plus benzidine reaction. The specific gravity of the urine throughout the hospital course was never above 1.012. Marked albuminuria persisted. At times there were as many as 200-300 RBC per high power field in the centrifuged urinary sediment. Stool examination was negative. NPN at the time of admission was 75 mg. per cent. Phenolsulfonphtalein test showed an excretion of only 22 per cent in two hours. Admission blood cultures yielded 15 colonies of alpha hemolytic streptococci (viridans) per cc. Electrocardiogram showed normal sinus rhythm with levogram predominant, and the conclusion was that the record did not indicate myocardial disease. Fluoroscopy and a film of the chest were reported as consistent with cardiac hypertrophy, a small congenital defect explaining the long-standing cardiac signs.

Course in Hospital: The patient was given a soft diet supplemented by accessory vitamins, iron and liver. He was digitalized and fluids were restricted to 2,000 cc. each day. The edema persisted in spite of these measures, and a check on the plasma protein revealed a total protein of 5.4 gm. per cent with albumin of 2.3 gm. per cent and globulin of 3.1 gm. per cent, with an A/G ratio of .74. (Dr. Callaway, commenting: The blood protein was not particularly low. However, in the normal case we expect the total proteins to be about 6.8 gm. per cent.) He was given a total of 1,250 cc. of blood in four transfusions. Following the last transfusion the hematuria became more pronounced and he was given no blood during the nine last hospital days. The NPN continued to rise, and two days previous to death a pericardial friction rub could be heard. On the following day the NPN was found to be 150 mg. per cent. Three days before death he was given sulfapyridine intravenously. Immediately after the drug was administered the concentration was 41 mg. per cent and in eight hours had fallen to 3.6 mg. per cent. The drug was not given with the idea that it would be life-saving, but to see if the blood could be sterilized by a high concentration of the drug. On the following day, however, there were 60 colonies of alpha hemolytic streptococci per cc. of blood.

On the day before death, the plasma CO/2 combining power was 24 vol. per cent. In spite of intravenous molar lactate the CO/2 combining power was 28 vol. per cent on the day of death.

During the first ten hospital days the patient's temperature was seldom below 38°C. and on two occasions was above 40. He had one chill. During the last six days of his life the temperature only on two occasions was above 37. The WBC count varied from 6,000 to 17,000. At the time of death the Hgb. was 48 per cent.

On the sixteenth hospital day he complained of slight precordial pain and expired quietly a few minutes afterward.

Dr. Callaway: In summarizing, we have a forty-eight year old white man who apparently had been in good health until five months before admission. He gave a family history of cardiac disease. He himself had had a leaking heart since eight years of age and we must assume that he had had some heart disease. Until five months before admission he got along all right. The findings probably indicate subacute endocarditis superimposed on a previously damaged heart. As we know, 5 per cent of patients with congenital heart disease develop subacute bacterial endocarditis. Eighty per cent of cases of subacute bacterial endocarditis show rheumatic heart disease.

This man's illness began about five months before admission with chills and fever. Following that there was pain in the chest which was probably pulmonary infarction. There were petechiae on the extremities probably due to emboli. The patient also developed nephritis; the NPN went up considerably and there was uremia. Again I interpret this as an embolic phenomenon. Looking at the chest plate we see that he does not have a great deal of left sided cardiac enlargement. A patent interventricular septum is believed to be present because of: (1) a history of leaking heart and heart disease since early childhood, (2) superimposed subacute bacterial endocarditis with petechiae, emboli, etc., (3) physical signs showing globular heart, systolic thrill and a harsh loud systolic murmur heard best at left lower border of sternum, (4) x-ray and fluoroscopic evidence consistent with patent septal defect. He did not respond to molar lactate probably because of a failing circulation. For the anatomical diagnosis we assume that the patient had: Congenital heart disease; patent interventricular septum; subacute bacterial endocarditis; old pulmonary infarct; glomerulonephritis; cardiac hypertrophy; pericarditis (uremic?, embolic?). He may have had some other valvular lesions. Not having seen the patient, I cannot diagnose anything from the notes I have except patent interventricular septum. He probably showed an old pulmonary infarct.

Dr. Roger Baker: May we see the x-rays?

Dr. William Wallace: First of all the lung at the right base shows a line of thickening at the lower border between the upper and middle lobes. This is the only evidence of previous pulmonary infarct. He did experience pain at the time of infarction in the right base. As for the heart, it is slightly enlarged. It is not markedly globular, but the tip of the apex is rounded. My first impression was that of mitral disease. We repeated the examination by fluoroscopy and gave him barium, and made a differentiation in favor of ventricular septum defect because the left auricle was not enlarged posteriorly and did not encroach upon the esophagus.

Dr. Baker: Would any one like to go further and place the lesion on one side of the heart or the other?

Dr. Dick: The fact that embolic phenomena were noted in the form of a pulmonary infarct suggests that the lesion was on the right side of the heart.

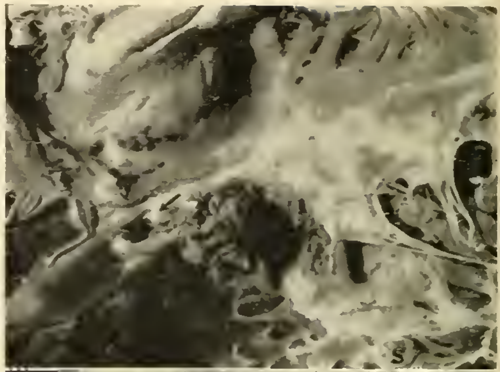
Dr. Baker: Which way would blood circulate through a septal defect?

Dr. Callaway: From left to right, because of the greater pressure in the left side.

Dr. Baker: If that is so the lesion could be on the left side and an embolus to the lung could come from the left side of the heart, pass through the septal defect and through the right side of the heart to the lung. However, during diastole, the blood could pass in either direction through the patent septum.

Dr. Baker (demonstrating organs): The heart has a vegetation 2 cm. in diameter on the infundibular cusp of the tricuspid valve (Fig. 1). The valve leaflet has been eroded and is ruptured. The interventricular defect is in the upper part of the ventricular septum, in the fibrous portion, and is as large as a lead pencil—that is, a little less than 1 cm. in diameter. The vegetation extends as a prong from the tricuspid valve through the septal defect and presents in the chamber of the left ventricle (Fig. 2). Very interestingly, this prong is not attached to the walls of the defect itself, but lies free in the opening. It seems then that the original growth was on the tricuspid valve at a point where blood passing through the defect would impinge on the valve. The vegetation on the tricuspid valve has formed implants on that wall of the right ventricle away from the septum, and here chordae tendineae have been severed by erosion. This accident, coupled with the perforation of the valve leaflet, caused insufficiency of the tricuspid valve. This is to be correlated with the dilatation of the right side of the heart.

The pulmonary and aortic valves appear normal.



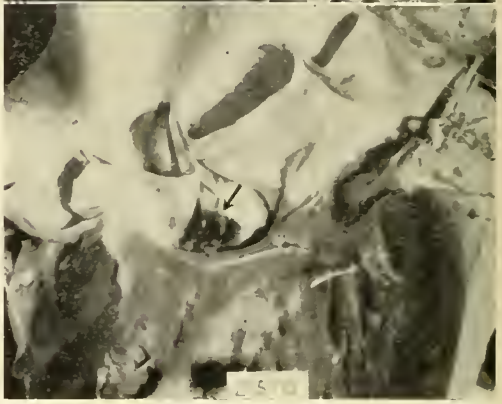


Fig. 1. Vegetation (V) and ulceration of tricuspid valve leaflet. Interventricular defect (arrow) to left. Note stump (s) of attachment of chordae tendineae and mural vegetative involvement in right lower corner.

Fig. 2. Prong of vegetation (arrow) extending through the interventricular defect into the left ventricle. Aortic valve and aorta above. Chamber of left ventricle below.

At the base of the right lung is an infarct. It is both white and yellow. The yellowness is probably due to hemosiderin, which would take some time to form. The clinical history indicates that the infarction occurred five weeks before death. The appearance of the infarct is consistent with that time interval. The lungs are heavy, due to congestion. The spleen is a typical acute splenic tumor. The kidneys are enormous—two or three times normal size — and studded with petechial hemorrhages. The liver presents marked chronic passive congestion.

A microscopic section (projecting sections on screen) of the tip of a portion of vegetation indicates that the latter is composed largely of Gram-positive cocci. There is a central necrotic area and a peripheral zone of fibrin and red cells. Sections of the kidneys show red cells in the tubules. These foci correspond to the petechiae noted on the surfaces of the kidneys and to the finding of red cells in the urine during life. In the glomeruli are thrombosed capillaries. The capsules show "crescent" formation on occasion, but these are all of recent origin. No glomerular or arteriolar changes indicative of kidney disease antedating the streptococcus septicemia are seen. The cardiac hypertrophy is therefore not to be associated with pre-existent renal disease. It is impossible for me to say which of the following factors was chiefly responsible for the cardiac hypertrophy: (1) hypertension (which was present, with high pulse pressure), (2) patency of interventricular septum, (3) tricuspid insufficiency, or (4) the recent renal damage.

Anatomical Diagnosis

(No. 2570)

Congenital heart disease: patent interventricular septum.

Cardiac hypertrophy (450 grams).

Subacute bacterial ulcerative endocarditis (streptococcus viridans) of tricuspid valve with remarkable projection of prong of vegetation through septal defect; implants of vegetation on mural endocardium with erosion of chordae tendineae.

Infarct of right lung with adjacent pleural adhesions.

Tricuspid insufficiency.

Chronic passive congestion of viscera. Pulmonary and subcutaneous edema. Ascites. Hydrocele.

Streptococcus viridans septicemia with hemorrhagic glomerulonephritis. Uremia. Fibrinous pericarditis. Acute splenic tumor. Focal necroses and ulcerations of intestinal mucosa.

Mild benign adenomatous prostatic hypertrophy.

Dr. Baker: The interest in this case lies in the fact that there was a congenital anomaly in relation to which bacterial endocarditis developed. It is suggested that the location of the vegetation is at a point at which a stream of blood would impinge when it passed through the abnormal opening in the septum. Such forceful continuous contact of the stream of blood may be the essential reason why the bacterial growth has developed at just this site. The manner in which the growth extends through the opening also suggests that blood must have passed not only from left to right as one would expect but also from right to left, perhaps during diastole.

Reference to the literature (Maude Abbott, 1925)(1) reveals the following interesting conclusion as the result of the study of a series of cases similar to the present one:

"In septal defects and patent ductus . . . . the (bacterial) lesion is usually right-sided and gives unmistakable evidence, both by this fact and by the presence of infarcts in the pulmonary circulation and absence of those on the systemic side, that the shunt in these abnormal communications is arterial-venous under the ordinary conditions of the circulation in health."

Here is an autopsy specimen from another case in which bacterial growth occurred on the pulmonary artery at the opening of a patent ductus. No growth occurred on the aorta at the other end of the patent ductus. This is in keeping with the observations of Abbott.

Therefore, when bacterial endocarditis develops in cases of congenital defect of the interventricular septum, the vegetations will probably develop on the right side primarily and involve the tricuspid valve.

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1. Abbott, M.: Inflammatory Processes in Cardiovascular Defects, Ann. Clin. Med. 4:189, 1925.

CLINICO-PATHOLOGICAL CONFERENCE

City Memorial Hospital

Winston-Salem

Mr. R. A. M., a white male fifty-nine years of age who had been living as a tramp, entered the hospital May 4, 1939, with swelling of the legs, pain in the left leg, and chills. The patient's family history was negative. The only important past history obtained was that of gonorrhea and syphilis twenty-thirty years ago treated by seventeen "shots" in the arm, and gall bladder disease fifteen years ago. Recently he had had moderate anorexia associated with a desire to vomit. The present illness began about twelve days before admission, with swelling of the ankles, which gradually extended up the legs. Three days before admission he began to have pain in the region of the left knee, which had become increasingly tender. The next day, while walking on the road, he became exhausted and spent the night in the woods sleeping by a camp fire. He had three chills during the night. His diet had been limited almost entirely to eggs, milk, rice and cereal with very little green vegetables and fruit. He appeared anxious and showed evidence of having lived under poor hygienic conditions. The sclera were icteric, the pupils were round and equal, and reacted to light and accommodation. The tongue was coated, the breath foul, the teeth in poor condition, and the pharynx reddened. The lungs were normal. The heart was enlarged to the left. The apex impulse was palpable in the anterior axillary line in the fifth intercostal space. The heart sounds were distant with a soft systolic blow over the mitral area. The second heart sound was slurred. No thrill was palpable. The rate was 84 with regular rhythm, and the blood pressure was 120/70. The peripheral vessels were thickened but not sclerotic. There was generalized edema of the abdomen, especially marked in the sacral region. The liver was palpable at the costal margin. The spleen was not palpable. Free fluid was present in the abdominal cavity. Both legs were edematous and the left leg was red and tender with a small bleb present above the knee. Pulsation was present in the dorsalis pedis vessels and the femoral vessels. The genitalia were edematous. No abnormal neurological signs were present. The temperature on admission was 98.6°; pulse, 84; and the respiration, 20.

Laboratory Work:

Urine: Negative except for 15 to 20 W. B. C. Bile present. S. G. 1.023.

Blood:

R.B.C.	3,300,000	Hb. 12 grams
W.B.C.	13,150	
Stabs	23%	
Segs	60%	
Lymphs	9%	
Monos	7%	

Kline: Doubtful.
Stools: Negative for parasites, ova and blood.
Van den Bergh: Direct reaction, positive.
Icterus Index: 10
N. P. N.: 40
Sugar: 102
Smear from blister fluid on leg showed staphylococcus.
Blood albumin: 3.27 grams.
Globulin: 1.48 grams.
Blood culture: Negative in 48 hours.

X-ray examination of the chest on May 6 showed congestion of the pulmonary vessels in both bases, more marked on the right. There were adhesions between the pleura and the pericardium and a slight amount of fluid in the costophrenic angle. The cardiac outline was not enlarged, but the contour of the left ventricle was concave. During the patient's stay the temperature rose to 101.5° on alternate days for the first eight days. This was thought to be due to lymphangitis of the left leg, and the patient was given sulfanilamide. After the eighth day the temperature remained normal. By May 12 the patient had developed fluid in the right base and pulmonary edema. The heart sounds at this time were of poor quality. The heart rate was 70 with digitalis. The patient showed a gradual downhill course. The pulse ranged from 80-100. During the last twelve hours of life the pulse rate increased steadily from 108-146. The temperature at the same time rose from 96°F. to 102.6°F, and the respirations increased from 24-42. Just before death the patient regurgitated a large amount of dark brown blood. blood.

Clinical Discussion: (Dr. R. L. McMillan): This case presents several points of interest in differential diagnosis. The problem is complicated by several factors. In the first place, the history does not seem adequate, as the patient apparently was a poor witness.

The history shows a primary complaint of progressive swellings of the feet and legs, and yet there was no dyspnea, orthopnea, palpitation or other symptom of congestive heart failure. Furthermore, we have the roentgenologist's assurance that the heart was not enlarged. One must therefore conclude that this man's final illness was not heart failure, except as a very late terminal affair.

The history of pain in the left knee, and finding the left leg hot. red, swollen, and tender indicates either cellulitis or thrombophlebitis.

The large amount of abdominal ascites, history of some liver disease fifteen years ago, icteric index of 10, anorexia, nausea, and finally hematemesis, lead to the diagnosis of cirrhosis of the liver.

There was likely a terminal pneumonia and some heart failure with pulmonary edema in the end.

In summary then, it seems likely that this patient had cirrhosis of the liver, cellulitis of the leg, generalized arteriosclerosis, multiple vitamin deficiency, and terminal pneumonia.

Autopsy: The peritoneal cavity contained over two liters of cloudy, red fluid. The right pleural cavity contained one liter of cloudy, straw-colored fluid, and the left pleural cavity contained 300 cc. The liver weighed 1,000 grams and was typical of Laennec's cirrhosis. The stomach and small intestines were distended with black semi-liquid blood and blood clots. The esophageal veins were dilated and one of them was ruptured. The left lung was soft and hemorrhagic and the bronchi contained black, semi-liquid material indicating aspiration of gastric contents. The mitral leaflets showed healed endocarditis probably rheumatic in origin. There was no evidence of coronary disease.

BULLETIN BOARD

STATE BOARD OF HEALTH

Dr. R. B. Aiken, industrial hygiene physician for the Vermont State Board of Health, made a tour of the state with Dr. T. F. Vestal, Director of the North Carolina Division of Industrial Hygiene.

They visited foundries, granite works, woolen mills, knitting and pulp mills. Practically all these industries exist in Vermont, Dr. Aiken explained, and added: "It was suggested by the National Division of Industrial Hygiene that I come to North Carolina in order to see practical demonstrations of just how these occupational problems are being handled from both a medical and an engineering standpoint."

Nutritional Study

North Carolina, through the medium of its State Board of Health, in cooperation with other important agencies, is preparing to take an advanced step in the field of nutrition.

The General Committee on Nutrition met at the call of Dr. Carl V. Reynolds, State Health Officer, in the new State Laboratory of Hygiene building, and discussed plans for the improvement of the nutritional status of the people of North Carolina. As a first step, it was determined to launch a state-wide fact-finding program, to be carried on through the various agencies represented.

Cooperating Agencies

The committee, organized on a state-wide basis, is composed of the following members from the participating agencies:

Department of Public Instruction: Charles E. Spencer, representing Superintendent Clyde A. Erwin; Miss Virginia Ward.

Duke University School of Medicine: Dr. W. C. Davison, dean; Dr. William A. Perlzweig; Dr. G. S. Eadie; Dr. W. J. Dann.

Rockefeller Foundation: Dr. John A. Ferrell, Dr. John F. Kendrick, Dr. D. F. Milam.

Department of Public Welfare: Mrs. W. T. Bost, commissioner; Dr. James Watson, head of the Division of Mental Hygiene.

Department of Agriculture: Dr. E. C. Constable, representing Commissioner W. Kerr Scott; Dr. C. W. Pegram.

Extension Division, State College: Dean I. O. Schaub, Dr. John W. Goodman.

North Carolina Medical Society: Dr. Cloyce R. Tew, representing Dr. T. W. M. Long.

North Carolina College for Women: Miss Margaret Edwards.

University of North Carolina, Division of Public Health: Dr. H. W. Brown.

State Board of Health: Dr. G. M. Cooper, Dr. E. S. Lupton, Dr. J. C. Knox, Dr. R. E. Fox, Dr. Walter Wilkins.

General Purposes

Dr. Reynolds, who called the conference and presided, explained its purposes and outlined plans for a cooperative nutritional study.

The purpose of the study, which is being set up in cooperation with the Duke University Medical School, "is to get an accurate measure of the present nutritional status of selected areas and groups of the population," Dr. Reynolds explained. The first studies, including blood tests of patients, will be conducted in an area within thirty miles of Durham.

The state-wide nutrition committee will supervise the study and later formulate a practical program for improving the nutritional status of the whole population.

NEW BUILDING FOR STATE LABORATORY OF HYGIENE

On February 21 the Clarence Albert Shore Memorial building of the State Laboratory of Hygiene was formally dedicated. Among the speakers in the three-hour ceremony were Governor Hoey, who paid tribute to Dr. Shore and to other pioneers in North Carolina's public health program, and Dr. John A. Ferrell, associate director of the International Health Division of the Rockefeller Foundation, who was associated with Dr. Shore in the early days of the laboratory. Dr. Ferrell, speaking of the new $200,000 building and a $180,000 farm laboratory nearing completion, said: "This excellent laboratory set-up is only approximated by Georgia in the states of the South."

Following the speeches of the morning, Governor Hoey participated in the unveiling of a memorial tablet for Dr. Shore.

NEWS NOTES FROM DUKE UNIVERSITY SCHOOL OF MEDICINE AND DUKE HOSPITAL

The following clinics have been held recently:

January 26, "Testosterone Therapy in Hypogenitalism", by Dr. Samuel A. Vest, Jr., Professor of Urology, University of Virginia Medical School.

February 27, "Appendicitis", by Dr. John M. T. Finney, Jr., Associate in Surgery, The Johns Hopkins University School of Medicine.

February 28, "Influenza", by Dr. Thomas Francis, Jr., Professor of Bacteriology, Bellevue Medical School.

Through the grant of $175,000 from The Rockefeller Foundation, a department of Psychiatry and Mental Hygiene has been established at Duke University, to be operated beginning September 1, 1940. The Highland Hospital, at Asheville, N. C., a gift to the University last year by Dr. Robert S. Carroll, will be used in connection with this department. Dr. Richard S. Lyman, now of the Phipps Psychiatric Clinic, The Johns Hopkins University, has been appointed head of the new department.

News Notes from the School of Medicine of the University of North Carolina

Sponsored by the School of Medicine and the Extension Division of the University of North Carolina, the Third Post Graduate Course in Medicine at Charlotte began on Tuesday, February 6. Following is the program for the entire course:

February 6—"Problems Presented by the Symptom Jaundice"—Dr. A. M. Snell, Mayo Clinic, Rochester, Minnesota.

February 13—"The Diagnosis and Treatment of Vitamin Deficiencies in Man"—Dr. Tom Spies, Professor of Medicine, and Director of Research Nutrition, University of Cincinnati College of Medicine, Cincinnati, Ohio.

February 20—"Meniere's Disease and Other Vertigoes: Cranial Neuralgias and Other Diseases and Lesions of the Cranial Nerves"—Dr. Walter E. Dandy, Professor of Neurology, Johns Hopkins Medical School, Baltimore, Md.

March 5—"The Diagnosis and Treatment of Syphilis"—Dr. Udo J. Wile, Professor of Dermatology and Syphilology, University of Michigan, Ann Arbor, Mich.

March 12—"Thyroid and Other Endocrine Disorders"—Dr. J. H. Means, Jackson Professor of Clinical Medicine, Harvard University School of Medicine, Boston, Mass.

March 19—"Management of the Menopause"—Dr. Emil Novak, Professor of Gynecology, Johns Hopkins School of Medicine, Baltimore, Md.

Clinics are held at 4:30 p. m., followed by dinner at 7:00 p. m., and a lecture at 8:00 p. m.

Post-graduate courses will begin in Raleigh on March 15 and in Goldsboro on March 16.

News Notes from the Wake Forest Medical School

Dr. C. C. Carpenter, Dean of the Medical School, attended the Annual Congress on Medical Education held in Chicago on February 12 and 13. Dr. Carpenter remained in Chicago for conferences with various medical educators, officials of the American Medical Association, and Deans of other leading schools, on the facilities and educational program of the school as it will be when moved to Winston-Salem and expanded to a four year institution. All consulted were enthusiastic in their praise. A great majority of the items on which a medical school is rated placed the School in the upper ten per cent, when compared with existing four year schools.

The Medical School sponsored a Student Convocation for all departments of the college on January 8. Dr. Herbert S. Wells, Associate Professor of Physiology at Vanderbilt University School of Medicine, was the guest speaker. His subject was, "The Physiology of Living".

Dr. Robert P. Morehead, Assistant Professor of Pathology, was guest speaker at the Second District meeting of the South Carolina Medical Society held at Batesburg on February 1, 1940. His subject was, "Appendicitis—A Clinical and Pathological Study of 5,644 Cases".

Dr. Camillo Artom, Professor of Biochemistry, was recently selected, along with Dr. L. Emmett Holt, Jr., of Johns Hopkins and Dr. W. R. Bloor, of the University of Rochester, by the Carolene Products Co. to make a special study of fat metabolism.

North Carolina Mental Hygiene Society

The Fourth Annual Meeting of the North Carolina Mental Hygiene Society was held at the Washington Duke Hotel in Durham on February 16, with Dr. W. R. Stanford presiding. The general topic for the afternoon program, which began at 2:30 o'clock, was Mental Hygiene of the Child. The speakers for this meeting were W. D. Perry, Ph.D., Director of the University Testing Service, and Adviser for the General College, University of North Carolina, whose subject was "The Child in the School"; Richard F. Richie, M.D., Assistant Director, Division of Mental Hygiene, State Board of Charities and Public Welfare, who spoke on "The Child in the Community"; and Frank Howard Richardson, M.D., of Black Mountain, who spoke on "The Child in the Home". A business meeting was held at 4:30 o'clock, and an informal dinner at 7:00 o'clock. The guest speaker at the evening meeting was Dr. C. C. Burlingame, Psychiatrist-in-Chief of the Neuro-Psychiatric Institute of the Hartford Retreat, Hartford, Connecticut, whose topic was "Youth and Middle Age—Neglected Ages of Man".

Tri-State Medical Association

The Forty-Second Annual Meeting of the Tri-State Medical Association of the Carolinas and Virginia was held at the John Marshall Hotel in Richmond on February 26 and 27. Among the speakers were Dr. Graham Reid of Charlotte, who spoke on "Intubation of the Small Intestine as It is Related to Intestinal Obstruction"; Dr. G. Carlyle Cooke of Winston-Salem, who discussed "Some Chemical Problems Confronting the Surgeon"; Dr. R. B. Davis of Greensboro, who gave a paper on "The Differential Diagnosis Between Chronic Appendicitis and Chronic Disease Conditions of the Right Ureter"; Dr. W. S. Cornell of Charlotte, whose subject was "The Selection of Patients with Gallbladder Disease for Surgery"; Dr. Deryl Hart of Durham, who spoke on "Sterilizing the Air in the Operating Room with Bactericidal Radiation"; Dr. Jack Mickley of Tabor City, who gave a paper on the "Treatment of Venereal Ulcers in General Practice"; and Dr. R. S. Anderson of Rocky Mount, who gave an illustrated lecture on "Four Problems Concerning Adenomatous Goiter". Guest speakers were Dr. Charles F. Geschickter of Baltimore, who gave an address on "Some Phases of the Cancer Problem"; Dr. A. C. Broders of Rochester, whose subject was "Cancer as We Know It Today"; Dr. Temple Fay of Philadelphia, who gave an address on "Refrigeration in Cancer"; Dr. Seale Harris of Birmingham, who addressed the Association on "The Diagnosis and Dietary Management of Hyperinsulinism"; Dr. Maurice Protas of Washington, who spoke on "The Insulins and Their Uses"; Dr. Emil Novak of Baltimore, whose address was on "The Treatment of Primary Dysmenorrhea"; and Dr. Lawrence F. Woolley of Towson, Md., who gave an address on "Morbid Fear and Anxiety as a Cause of Physico-Pathological Changes in Structure".

Dr. C. J. Andrews of Norfolk is president of the Association for the coming year, and Dr. A. G. Brenizer of Charlotte was named president-elect. Dr. R. B. Davis of Greensboro, Dr. J. B. Davis, Jr., of Lynchburg, and Dr. G. R. Wilkinson of Greenville, S. C., were elected vice-presidents. Elected to fill vacancies on the council were Dr. J. R. Young of Anderson, S. C., Dr. R. P. Morehead of Wake Forest, and Dr. O. B. Darden of Richmond.

The American College of Physicians

The Twenty-Fourth Annual Session of the American College of Physicians will be held in Cleveland, Ohio, April 1-5, 1940. General headquarters for the meeting will be in the Public Auditorium.

American Board of Internal Medicine, Inc.

The American Board of Internal Medicine will conduct oral examinations just previous to the meeting of the American College of Physicians in Cleveland and just in advance of the meeting of the American Medical Association in New York City.

Applicants who have successfully passed the written examination and plan to take the oral examination in 1940, should advise the office of the Secretary at least six weeks in advance of the date of the examination they desire to take.

The next written examination for 1940 will be given on October 21. Applications for this examination must be filed in the Secretary's office by September 1.

Application forms may be obtained from Dr. William S. Middleton, Secretary-Treasurer, 1301 University Avenue, Madison, Wisconsin, U. S. A.

Second Call for the Decennial Meeting of the Convention for the Revision of the Pharmacopoeia of the United States of America

In compliance with the provisions of the Constitution and By-Laws of the United States Pharmacopoeial Convention, I hereby issue this second call to the several bodies entitled under the Constitution to representation therein to appoint three delegates and three alternates to the Decennial Meeting of the Convention for the Revision of the Pharmacopoeia of the United States of America, which is to meet in Washington, D. C., on May 14, 1940.

WALTER A. BASTEDO, M. D.,
President of the United States
Pharmacopoeial Convention.

Notice—In order that the records may be brought up-to-date and checked, that card files may be prepared, and that the other functions of the Committee on Credentials may be performed, it is desirable that the Credentials of all Delegates appointed to attend this Decennial Meeting shall be in the hands of the Secretary, Mr. L. E. Warren, 2 Raymond St., Chevy Chase, Maryland, not later than March 15, 1940.

Educational Qualifications of Health Officers

The American Public Health Association has recently adopted for distribution a report on the "Educational Qualifications of Health Officers", in the belief that it will serve a useful purpose in raising the educational standards of professional public health personnel. Copies may be secured without cost from the American Public Health Association, 50 West 50th Street, New York, N. Y.

Buncombe County Medical Society

At its first February meeting, held at the City Hall on February 5, the Buncombe County Medical Society heard the program which was scheduled for January 22 but was postponed because of a conflict. Dr. R. C. Bunts presented a paper on "Congenital Obstruction of the Bladder Neck", which was discussed by Dr. W. C. Lott. On February 19 Dr. C. N. Burton gave a paper on "Panhysterectomy", with Dr. Julian A. Moore as respondent.

Forsyth County Medical Society

The February meeting of the Forsyth County Medical Society was held at the Smokehouse in Winston-Salem, on February 20 at 7 o'clock. The Guest Speaker was Dr. Howard Holt Bradshaw, Associate Professor of Surgery at the Jefferson Medical College, Philadelphia. Dr. Bradshaw, who has done a most impressive amount of Thoracic Surgery and is one of the outstanding men in that line in the country, spoke on "The Surgical Treatment of Bronchiectasis". His lecture was illustrated by lantern slides and motion pictures. A number of visitors from Stokes, Surry, Yadkin, and Guilford counties were present.

Guilford County Medical Society

The Guilford County Medical Society met on February 1 at the Jefferson Roof Garden in Greensboro. Guest speakers were Dr. T. W. M. Long, whose subject was "Insurance as Offered to the Public", and Dr. Arthur Ambler, of Asheville, who spoke on "The Present Status of Anesthesia".

Halifax County Medical Society

The Halifax County Medical Society held its regular meeting on Friday night, February 9, at 7:00 o'clock at the Roanoke Rapids Hospital, with Dr. White, president of the society, presiding.

Dr. C. T. Smith, of Rocky Mount, presented a paper on "Diabetes and Diabetic Coma", in which the salient symptoms and the modern advances in treatment were discussed.

Johnston County Medical Society

The Johnston County Medical Society met in Benson on January 30 for a supper meeting. Drs. McBride and Persons, of Duke University, gave a talk on "The Uses and Misuses of Sulfanilamide and Sulfapyridine", and Dr. K. L. Johnson, a dentist, showed moving pictures in technicolor of the extraction of impacted teeth by using an instrument to break them before removal.

News Notes

Dr. J. E. McLaughlin, formerly of Statesville, an honorary fellow of the Medical Society of the State of North Carolina and of the Iredell-Alexander Medical Society, is now living with his son-in-law and daughter, Dr. and Mrs. J. S. Talley, in Troutman. Dr. McLaughlin retired from active practice in 1937 because of failing eyesight, after having practiced for fifty-one years.

WOMAN'S AUXILIARY

Officers

President: Mrs. C. F. Strosnider, Goldsboro.
President-Elect: Mrs. C. R. Hedrick, Lenoir.
Chairman of Past Presidents: Mrs. P. P. McCain, Sanatorium.
Corresponding Secretary: Mrs. Jack Harrell, Goldsboro.
Recording Secretary: Mrs. J. D. Freeman, Wilmington.
Treasurer: Mrs. C. E. Judd, Raleigh.

BEGINNING OF THE WOMAN'S AUXILIARY

The Auxiliary to the Medical Society of the State of North Carolina has grown so rapidly and the membership has varied so greatly in the seventeen years of its existence that we felt it might be interesting to write a little about our beginnings and of those foundations upon which we have built.

The seventieth annual session of the Medical Society of the State of North Carolina was held in Asheville in April, 1923, with Dr. John Wesley Long presiding. In his President's Address, Dr. Long announced the birth of our Auxiliary on Sunday, March 17, 1923, at Sanatorium. The Auxiliary was the brain child of Mrs. P. P. McCain. Daughter of a doctor and wife of a doctor, Sadie McBrayer McCain could not remember when she first attended an annual meeting of the State Medical Society. She had caught the vision of a group of wives and daughters who would meet together in an effort to "promote unity, harmony and concord between the members of the medical profession and between the families of such members; to assist in the social activities at state, district and county society meetings; to interpret to the public the traditions, aims and objects of the medical profession; to fraternize with women's organizations of whatsoever kind, and to promote in every possible way the interests in general of the medical profession—locally, and in the State and Nation." (See Constitution and By-Laws in the 1923 TRANSACTIONS OF THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA.) Mrs. McCain's father, Dr. L. B. McBrayer, was secretary-treasurer of the Medical Society and deeply interested in his daughter's vision. Up to the day of his death Dr. McBrayer maintained his interest in the Auxiliary and its activities. He considered it an integral part of the Medical Society. Our program was always incorporated in the program of the Medical Society. Our membership list and proceedings always had a place in the TRANSACTIONS. Dilatory presidents were gently and courteously prodded until the material was in. The Auxiliary is deeply indebted to Dr. McBrayer for his kindly consideration and his understanding friendship through many years. We feel that a great part of the credit for the formation of our Auxiliary belongs to Dr. McBrayer—that it was through his interest that Dr. Long became interested and took the journey to Sanatorium to discuss it with Mrs. McCain.

In Dr. Long's President's Address full credit was given to Mrs. McCain, and responsibility for the "proper raising and education" of the baby auxiliary was placed upon her shoulders. He asked that the Society "acknowledge paternity and give its approval by resolution in the House of Delegates." This was done.

On April 18, 1923, the Auxiliary was formally organized—or christened, as Dr. Long expressed it—at a meeting in Kenilworth Inn, Biltmore, with Mrs. McCain acting as organizing chairman. Dr. Long and Dr. McBrayer attended the meeting and gave it official sanction. Mrs. C. S. Red, of Houston, Texas, President of the Auxiliary to the American Medical Association, was also present and gave a brief history and account of the work of the Auxiliary. Mrs. McCain was elected president and Mrs. I. W. Faison, of Charlotte, President-Elect. There were fifty-three wives of doctors present.

In our article next month we shall attempt to tell something of our projects and of how well we have kept the faith with the Medical Society.

MRS. J. BUREN SIDBURY, Chairman
Public Relations, Auxiliary to the
Medical Society of the State of
North Carolina.

AN EXAMINATION FOR MEMBERS OF THE AUXILIARY TO THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

Questions complied by Mrs. C. F. Strosnider.

Answers compiled by Mrs. P. P. McCain.
Financial statements verified by Mrs. E. C. Judd.

Request: Will each Auxiliary member please study these questions and answers? —Anna L. Strosnider, President.

1. When was the Auxiliary formed? April 18, 1923.
   A. Where? Asheville. How many members? Fifty-three.
   B. Tell all you know about this meeting. On March 17, 1923, Dr. John Wesley Long, then president of the Medical Society of the State of North Carolina, went to Sanatorium to talk over with Mrs. P. P. McCain the organization of an Auxiliary to the State Medical Society. As a result of this conference Mrs. C. S. Red, president of the Auxiliary to the American Medical Association, was present at the annual meeting in Asheville. The Auxiliary was formally organized at this meeting, April 18, 1923, by Mrs. C. S. Red and a Constitution and By-Laws were adopted. Reference — TRANSACTIONS OF THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA, 1923, pp. 466-467.
2. Has the Auxiliary gained in members? Yes, from 53 in 1923 to 423 in 1938.
3. What are the offices in the Auxiliary? President, three vice presidents, recording and corresponding secretaries, and treasurer.
   A. Who are the 1939-40 officers? See official stationery for 1939-40.
   B. Name the past presidents of the Auxiliary.
      1923—Mrs. P. P. McCain, organization president
      1924—Mrs. P. P. McCain, Sanatorium
      1925—Mrs. I. W. Faison, Charlotte
      1926—Mrs. J. Howell Way, Waynesville
      1927—Mrs. R. S. McGeachy, Kinston
      1928—Mrs. J. B. Lawrence, Raleigh
      1929—Mrs. A. B. Holmes, Fairmont
      1930—Mrs. J. H. Macon, Warrenton
      1931—Mrs. W. B. Murphy, Snow Hill
      1932—Mrs. R. S. McGeachy, Greenville
      1933—Mrs. W. P. Knight, Greensboro
      1934—Mrs. J. W. Huston, Asheville
      1935—Mrs. J. B. Sidbury, Wilmington
      1936—Mrs. C. P. Eldridge, Raleigh
      1937—Mrs. J. R. Terry, Lexington
      1938—Mrs. W. T. Rainey, Fayetteville
      1939—Mrs. J. A. Elliott, Charlotte
      1940—Mrs. C. F. Strosnider, Goldsboro.
4. What are the duties of each officer? Those given by Roberts Rules of Order.

   What are the objectives of the Auxiliary? Reference—TRANSACTIONS, 1938, p. 635. Art. II. Sec. 1.

   > Section 1. Objects . . . "The objects of this organization shall be to interpret the aims of the medical profession to other organizatons interested in the promotion of health education: To assist in the entertainment at the meetings of the Medical Society of the State of North Carolina; to promote friendliness among the families of the medical profession; and to do such work as may be approved from time to time by the Advisory Committee appointed by the Medical Society of the State of North Carolina."

   A. What is the relationship of the State Auxiliary to the National Auxiliary? We are affiliated with the National Auxiliary, cooperating with it in its programs and objectives, and paying twenty-five cents for each member of an organized Auxiliary. In return we get many valuable suggestions and pamphlets, and much practical information.
5. How do we become members of the Southern Medical Auxiliary?

A doctor's membership in the Southern Medical Association automatically makes his wife a member of the Auxiliary to the Southern Medical Association.

A. What officers and chairmen do we have specifically for the Southern Medical Auxiliary?
   (1) Councillor—appointed by president of the Southern Medical Auxiliary.
   (2) Jane Todd Crawford Memorial Chairmen.
   (3) Research Chairman.
   These chairmen have specific duties which can be learned from our information sheets.

B. What benefits do we derive from the Southern Medical Auxiliary?
   Borrowing from their library and the privilege of attending their stimulating meetings.

6. History of McCain Bed.
   A. When undertaken? 1928, Mrs. R. S. McGeachy, president.
   Why? To have a definite objective for the Auxiliary.
   B. How much have we spent on the upkeep of the McCain bed?
   $4,851.36 has been paid the North Carolina Sanatorium up to April 1, 1939.
   C. Who has occupied the McCain bed and how long was each a guest of the bed?
      (1) Mary Odum (child) Red Springs—4½ months.
      (2) Eleanor Stevens (doctor's daughter) Monroe—6 months.
      (3) Daisy Andrews (child) Carrboro—12 months.
      (4) Miss Ardis Jester (nurse) Sanatorium—18 months.
      (5) Dr. J. S. Johnson (physician) Cary—11 months.
      (6) Sara Beam (girl) Bryson City—5 months.
      (7) Marie Lowe (girl) Asheboro—7 months.
      (8) Harry Stegall (boy) Oxford—5 months.
      (9) Bertie Teague (young lady) Marshall—4 months.
      (10) Mr. L. S. Sawyer (young man) Columbia—14 months.
   D. Give the history of the naming of the bed. Reference—TRANSACTIONS 1935, p. 453.
   E. What amount has the Auxiliary set as a goal to raise for the endowment of this bed? The amount of $10,000.
   F. How much of this amount has been raised to date? By April 1, 1939, $1,421.66 of this amount had been raised.

7. The Student Loan Fund.
   A. When was this organized and why? This fund was created in May, 1930, Mrs. W. B. Murphy, president, to help worthy and needy doctors' children in their junior and senior years at college or for special work.
   B. How many loans have been made and how many have benefited from same? Up to September, 1939, six loans were made to three different people.
   C. How much money do we have in this fund? The amount in the bank November, 1939, was $619.79.
   D. What is the goal set for this fund? The goal is $10,000.

8. What is the Jane Todd Crawford Memorial Fund? This fund to be used to erect a memorial to Jane Todd Crawford.
   A. Give the outstanding details of Jane Todd Crawford's life. Reference—TRANSACTIONS, year 1933, p. 522.

9. How much does the Auxiliary get from a *Hygeia* subscription? The Auxiliary gets $1.25 from each subscription.
   A. How does the Auxiliary use this money? This money is placed in the McCain Bed Endowment Fund.

10. What are the Auxiliary dues? $1.00.
   A. Tell how this dollar is used. 50 cents goes to McCain Bed upkeep; 25 cents to American Medical Auxiliary; 25 cents for the State Auxiliary expenses.

11. What is Doctor's Day? Doctor's Day is a project of the Southern Medical Auxiliary, inaugurated for the purpose of honoring our doctors, both living and dead.
   A. When? March 30.
   B. Why was this date chosen? This date was chosen because on this date anesthesia was first given to the

world. Reference — TRANSACTIONS, 1935, p. 453. Executive Board Meeting Minutes, number 5.

12. Why should every doctor's wife belong to the Auxiliary? (1) To meet and discuss medical problems that are pertinent to the doctor's wife; (2) To gain information for helping lay groups; (3) To learn to know other doctors' wives better.
13. How can we make the Auxiliary more interesting and useful to its members? Have something definite to offer in the way of a program—short, spicy, but informative—at every meeting; encourage newest and oldest wives to attend; etc.

NOTICES

Owing to illness Mrs. John C. Tayloe has had to resign as Councillor for the Second District. Mrs. Graham Ramsey, 320 College Avenue, Washington, has now assumed the duties of Councillor for the Second District.

ANNA L. STROSNIDER, Pres.

The 18th Annual Convention of the Woman's Auxiliary to the American Medical Association will be held in New York City, June 10-14, 1940, with headquarters in the Hotel Pennsylvania. In view of the fact that the second edition of the World's Fair will accelerate advance hotel reservations, it is urged that reservations be made immediately through the Housing Bureau which has been set up by the American Medical Association, namely Dr. Peter Irving, Room 1036, 233 Broadway, New York City.

Have you made your hotel reservation for the 18th Annual Convention of the Woman's Auxiliary to the American Medical Association which will be held in New York City, June 10 to 14, 1940?

The headquarters are at the Hotel Pennsylvania and we are sure you will not want to miss this convention which promises to be an outstanding one. MAIL YOUR RESERVATION TODAY to Dr. Peter Irving, Housing Bureau, Room 1036, 233 Broadway, New York City.

In Memoriam

DR. JAMES ARTHUR KEIGER

Dr. James Arthur Keiger of Greensboro, one of our outstanding and most beloved members, died Thursday morning, February 1, 1940. He had been in declining health for several months, and on January 31 underwent an operation for gall stones, hoping to regain his health at least in part, but his physical condition was so depleted that he was unable to rally from the shock of operation.

Dr. Keiger was born in Stokes County near King, a son of the late John W. Keiger and Mrs. Martha Schaub Keiger. After attending the public schools in Stokes County he was a student at Booneville high school, graduated from the University of North Carolina in 1909 with an A. B. degree, and then taught school in High Point for two years.

He later took up the study of medicine and graduated from the University of Virginia in 1914 with Phi Beta Kappa honors. He served his internship at Orange Memorial Hospital, Orange, N. J., and did post graduate work at Bellevue Hospital, New York. He was later commissioned as Captain in the U. S. Public Health Service and was stationed at Camp Greene, Charlotte, N. C., during the World War.

He came to Greensboro in 1920 and opened offices for the practice of his profession, specializing in diseases of the genito-urinary tract and dermatology; here he enjoyed a lucrative practice until his health so declined that he was forced to limit his time in his office and take needed rest in an effort to regain his health.

Dr. Keiger was a member and past president of this Society, a member of the State Society and of the American Medical Association.

Dr. Keiger was married to Miss Ethel Bollinger in 1922, and of this union one son, Jimmy, survives. Also surviving are his wife, four brothers, Charles E. Keiger of Statesville, M. F. Keiger of Tobaccoville, Dr. O. R. Keiger of Winston-Salem, and Dr. C. C. Keiger of Charlotte, and two sisters, Mrs. John Lee Wilson of Madison and Miss Blanche Keiger of Greensboro.

Funeral services were held for Dr. Keiger in the First Presbyterian Church of Greensboro, services being conducted by Dr. Charles Myers, assisted by Dr. J. B. Craven, pastor of West Market Street Methodist Church, and interment followed in Forest Lawn Cemetery. The funeral was attended by a large concourse of sorrowing friends and relatives.

Dr. Keiger, a quiet unassuming man, but well qualified in his special branch of medicine, was held in high esteem not only by his patrons but by all who had the privilege of knowing him, and I dare say that no member of this Society was more beloved by its members. He had no enemies, and his friends were limited only by the number of those who knew him. It is with a feeling of deep sorrow that we bow in humble submission to the Divine will in calling hence our beloved brother and co-worker, and we extend our sincere sympathy to his sorrowing family and friends.

C. W. Banner,
Chairman Obituary Committee
Guilford County Society.

BOOK REVIEWS

DISEASES OF THE GALLBLADDER AND BILE DUCTS. By Waltman Walters, B.S., M.D., M.S. in Surgery, Sc.D., F.A.C.S., Head of Section in Division of Surgery. The Mayo Clinic; Professor of Surgery, The Mayo Foundation (University of Minnesota); and Albert M. Snell, B.S., M.S. in Medicine, F.A.C.P., Head of Section in Division of Medicine, The Mayo Clinic; Professor of Medicine, The Mayo Foundation (University of Minnesota). 645 pages with 342 illustrations on 195 figures. Philadelphia and London: W. B. Saunders Company, 1940 Cloth $10.00.

It is difficult to conceive of a more comprehensive and intelligently detailed presentation of diseases of the gallbladder and bile ducts than is put forth in the monograph by Walters and Snell.

In this work the subjects are completely developed in a most interesting and orderly sequence from their early historical existence to our present day knowledge, covering most meticulously the anatomical, phsyiological and pathological aspects as well as the medical and surgical treatment.

One is impressed by the exhaustive study in compiling this treatise and the delightful style of presentation. It is a distinctly valuable contribution to medical literature.

ACCEPTED FOODS AND THEIR NUTRITIONAL SIGNIFICANCE, a publication of the Council on Foods of the American Medical Association. Cloth, Price, $2.00 postpaid. Pp. 512; Chicago: American Medical Association, 1939.

ACCEPTED FOODS AND THEIR NUTRITIONAL SIGNIFICANCE contains descriptions and detailed information regarding the chemical composition of more than 3,800 accepted products, together with a discussion of the nutritional significance of each class of foods. The book provides also the Council's opinion on many topics in nutrition, dietetics and the proper advertising of foods.

This book will be a welcome reference book for all persons interested in securing authoritative information about foods, especially the processed and fabricated foods which are widely advertised. The accepted products are classified in various categories; fats and oils; fruit juices including tomato juice; canned and dried fruit products; grain products; preparations used in the feeding of infants; meats, fish and sea foods; milk and milk products other than butter; foods for special dietetic purposes; sugars and syrups; vegetables and mushrooms; and unclassified and miscellaneous foods, including gelatin, iodized salt, coffee, tea, chocolates, cocoa, chocolate flavored beverage bases, flavoring extracts, dessert products, baking powder, cream of tartar, baking soda, cottonseed flour. There is a suitable subject index as well as an index of all the manufacturers and distributors of food products that stand accepted by the Council on Foods.

ACCEPTED FOODS is indispensable for the library of every physician concerned with foods and nutrition.

INJECTION TREATMENT OF HERNIA, HYDROCELE, GANGLION, HEMORRHOIDS, PROSTATE GLAND, ANGIOMA, VARICOCELE, VARICOSE VEINS, BURSAE AND JOINTS. By Penn Riddle, B.S., M.D., F.A.C.S., Assistant Professor of Clinical and Operative Surgery, Baylor University, College of Medicine; Director of the Varicose Vein Clinic, Parkland Hospital, Dallas, Texas. Cloth. Price, $5.50. Pp. 290, with 153 illustrations. Philadelphia and London: W. B. Saunders Company, 1940.

This is an excellent detailed and complete work on treatment by injections. The author covers in detail the essential anatomy of the part, gives a brief history of the development of injections, and describes the actual technique of injection.

He has evidently investigated the various types and methods of injections with an open mind, and clearly states what may be expected from each. Nowhere in his work does he claim any cure-all properties for any method.

The text is most explicit and detailed, so that one needs little information not included in the author's description to proceed with the various forms of injections. He is most particular to emphasize that in many instances repeated injections over a period of time are necessary to obtain desired results, giving the average length of time required.

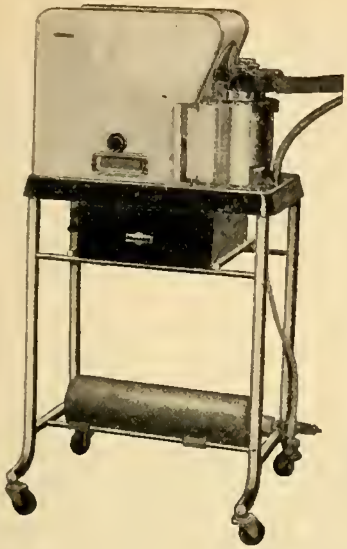
Beautiful, clear illustrations are profusely scattered throughout the text, making it very easy for the novice to understand the procedures.

The work will be of help to any one practicing the injection treatment, and to one who is not familiar with the injection treatment but who wishes to learn it, it will be invaluable.

WHAT IT MEANS TO BE A DOCTOR. By Dwight Anderson. Price, cloth, $1.00; paper, 25 cents. Pp. 87. New York: Medical Society of the State of New York, 1939.

While Mr. Anderson is not himself a doctor, few writers have told more truly what it means to be a doctor of the highest type—loyal to his profession, to his ideals, and to his patients. In narrative form, a doctor is followed through college, medical school, internship, into private practice and into the inner circles of organized medicine. No doctor could read it without having greater respect for his profession; no layman, without greater admiration for his doctor.

The Dominating Impulse in the Study of Medicine.—To those who, as teachers, watch successive classes of medical students progress in their course of study it is always striking to see how each group responds with enthusiasm when, after a year or two of laboratory study, it reaches the stage where contact with patients begins. This is what they have been working toward and waiting for. Dissecting room, microscope, chemical experiment—these were but means to prepare them for the great end which is the human relationship between the physician and the patient. It is the desire for this human relationship, with its opportunity for sympathetic intimacy and altruistic service, that remains today, as it has been through all the generations, the dominating impulse in drawing men to the study of medicine.—Peabody, Francis W.: Doctor and Patient, New York, The Macmillan Company, 1939.



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CHARLOTTE PFEIFFER, R. N., Superintendent.

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THE APPLICATION OF MEDICAL SCIENCE TO THE INDIVIDUAL

G. CANBY ROBINSON, M. D.
Associate Physician and Director of Medical Clinics
Johns Hopkins Hospital
BALTIMORE

Many years ago I read somewhere a brief description of medicine attributed to Marchand, an eminent teacher of the old and glorious German school of medicine. His words impressed me deeply, and fortunately I wrote them down. I say fortunately, because I have no trace of where I saw them, or who translated them from the German, and they remain like the memory of a kindly and gracious act done by some passing stranger in a crowded street. These words I have kept before me through the more mature years of my medical career, and have weighed their value against the teachings of experience. I have quoted them on former occasions to express a medical ideal, but today I repeat them not as an ideal, but because of the conviction that they briefly express the essence of medical service. It is with these words of Marchand as a text that I wish to discuss the application of medical science to the individual. They are as follows:

"Seek truth. Discover causes. Learn how they disturb life and how order is reestablished. By science and persuasion preserve men. By science, gentleness and firmness combat death and reduce suffering. Guide, encourage and console in a brotherly and tolerant spirit. This is medicine."

In these few words equal consideration is given to the science and to the art of medicine. The essence of medical science is expressed in the first three phrases: "Seek truth. Discover causes. Learn how they disturb life and how order is reestablished." It is clear that these principles of science are meant to be applied not to the study of a reaction in a test-tube, or to a phenomenon that can be observed only in the laboratory. They are meant to be applied to the study of the sick human being by the doctor using any means that will reveal truth, that will discover causes and that will teach him to understand disturbances of function and of structure, and give him knowledge of how to bring life back as far as it may be done, into a state of vital harmony which we think of as health. These few words could be readily expanded to stretch before us a wide view of the disciplines that constitute much of the medical curriculum of our schools.

We cannot learn how life is disturbed and how order is reestablished without a knowledge of normal, healthy man, as revealed to us bit by bit in the study of anatomy, physiology and biochemistry. We cannot discover causes without some knowledge of pathogenic micro-organisms, pathological processes and derangements of functions. Nor can we learn how order is reestablished without a ground-work of pharmacology and surgical procedures. We must learn to seek truth as related to the human body and mind by special forms of searching. The trained eye, the listening ear, the sensitive finger guided by the mind that is prepared are essential for success in seeking the sort of truth that is required. Technical proficiency in the use of methods and instruments and the ability to discern the essential from the insignificant all play a part in seeking truth regarding the human organism. We as doctors have before us the most intricate and confusing tasks of science, but at the same time, the most interesting, fascinating and

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Address delivered at the dedication of the new Medical and Public Health Building of the University of North Carolina at the Sesqui-Centennial Celebration, December 4, 1939.

varying problems that man is called upon to study. Let your own imaginations sweep across the multitude of situations in the realm of medicine and you will need no further enumeration to convince you that the tenets of science are the only safe guide to the solution of the problems that modern medicine has to face. It is no wonder that specialism is inevitable, and that many hands and many minds are now required to perform the tasks attempted by a single pair of hands and a single mind in years gone by. It is no wonder that hospitals are necessary, when team-work, consultation and technical proficiency are needed to meet the demands of present-day medical science on serious occasions when life or chronic illness may be in the balance.

But there is more to medicine than science. There is the human relation between doctor and patient. It is not by a cold and calculated process that medical science can be applied to the needs of the individual. There are many variations in the conditions and situations of human beings, obviously determined by age, sex and race, and less obviously by constitution and personal characteristics, by inheritance, childhood experiences, education, economic status and many other factors. It is these variations that led the philosopher John Dewey to write, "Just in the degree in which a physician is an artist in his work he uses his science, no matter how extensive and accurate, to furnish him with tools of inquiry into the individual case, and with methods of forecasting a method of dealing with it. Just in the degree in which, no matter how great his learning, he subordinates the individual case to some classification of disease and some generic rule of treatment, he sinks to the level of the routine mechanic. His intelligence and his action become rigid, dogmatic, instead of free and flexible."

Sauerbruck expresses somewhat the same idea from another viewpoint when he writes, "Physiology, chemistry and biology are useful aids in the search for medical truth, but will not of themselves, alone or together, explain the obscure system of events that constitutes the entity of human disease." Thus an eminent philosopher recognizes the necessity of individualizing medical service if we are not to sink to the level of the routine mechanic, and a leader in surgery tells us that the fundamental sciences are not enough to explain the obscurities of human illness. Medical service requires more than science as it is defined and understood today.

Let us return to Marchand for the answer to the question as to what more is needed. At first he clings to science but adds persuasion as a means of preserving men. "By science and persuasion preserve men." He recognizes that science alone is not enough in seeking that broad and all-inclusive objective, "preserve men", but that the reaction of one person to the persuasion of the other must be added. He then tells us how persuasion should be carried on, but still science precedes. "By science, gentleness and firmness combat death and reduce suffering." Here the emphasis is shifted from the general to the specific and he calls upon us to use gentleness and firmness in performing the tasks required to combat death and to reduce suffering, and bids us to combine these attributes of behavior with science in the study and care of the patient who is in danger and who suffers.

Marchand then lays down very simply and directly the guiding principles for the attitude of the doctor toward his patient in these words, "Guide, encourage and console in a brotherly and tolerant spirit." Here he tells us not only what we should strive to do in order to make our service and ministrations of the greatest value, but also the spirit in which it should be done. A brotherly spirit is that of equality, as there is no other human relationship where so many factors of inheritance and of possession exist in common as in the relationship of brothers. A tolerant spirit is that which is as free as possible from judgment of the conduct of another. "Judge not, that ye be not judged" expresses an attitude that should always exist in the personal doctor-patient relationship, and unless it does exist, efforts to guide, encourage and console may go for naught.

Finally, after the science of medicine as the primary requirement of medical service has been combined with the functions of the physician toward the individual and the spirit of medical service has been described, Marchand exclaims, "This is medicine." The longer I have pondered over this description of medicine, the more firmly have I become convinced that this final phrase is true and justified.

There are some practical lessons in this concept that we have examined, and my own studies of hospital patients have demonstrated conclusively that even under conditions most favorable for the application of science in the study of disease, there are elements of illness that require the study of the patient as a person or, in other words, as an individual with a definite place in society and with a conception of how he should live and behave in his own particular social situation. Because the patient is ill, his social status is disturbed, and it is with the hope of being restored to his normal life that he seeks medical aid. Disease, it is found, is only one factor of illness which prevents a normal way of living in a large majority of patients admitted to the medical service of the Johns Hopkins Hospital. Fear, worry, emotional tension and sometimes hate, also play a part in causing physical disability and suffering.

Let us take for example a specific study(1), an unselected series of fifty patients coming to the medical dispensary for digestive symptoms. As indigestion, to use the popular name, is notoriously prone to occur with emotional disturbances, this example cannot be generally applied to other types of illness, but in this series of patients 76 per cent had symptoms referable to emotional strain. There were 31 patients, or 62 per cent, in whom no evidence of disease could be found to account for their symptoms, and in 27 of them, or in more than half the number studied, just plain worry, although often excessive, was the cause of illness.

This study was made by inviting the patients, after their physical status had been determined, to sit quietly in a little office where they were encouraged to talk about their situations, their work, their families and their worries. What they said was recorded in detail, and when put together with the usual clinical record, gave us material for the study of the patient as a whole.

Among this group of patients representing a fair sample of those with digestive symptoms, there were several men with good industrial records overtaken by advancing years and by the insecurity involved in their situations. There was a young wife whose family doctor told her she had a mild case of gastric ulcer, and whose friends told her that this was an incurable disease. A thirty-one year old Polish housewife, with a Portugese husband, had been ill for two years because her husband and her father, whom her husband supported, were constantly in disagreement. A farm worker's wife of thirty-six had suffered both in mind and body for three years, ever since listening to a radio health talk in which the early symptoms of cancer of the stomach had been described. Her abdominal pain had been constant for a year, and she had made all her funeral arrangements before coming to the hospital, in spite of the fact that careful examinations failed to reveal any evidence of disease. For three years this patient had never failed to listen to the weekly radio talk which had initially precipitated her illness.

The story of a young married baker of twenty is especially striking as an example of how worry may be a cause of illness, how it may disturb life, and how order may be reestablished. After a fruitless search for an organic basis of most distressing choking spells, weakness, and shortness of breath which brought this young man, he thought, near to death, he reluctantly confessed to a fear of tuberculosis. His symptoms had begun at the time of his marriage seventeen months before he came to the hospital and had increased in severity as his wife approached the time when her first baby was expected, a few weeks later. He finally told the story which explained his anxiety. An older friend who lived next door was found to have tuberculosis at the time of his marriage, and died six months after his first child was born. The patient thought the same fate was in store for him, especially as his mother had repeatedly warned that he might have contracted the disease from his friend, and that his wife might have it. She even went so far as to say that he would probably die of it if he did not stop playing the saxophone and staying up late at night to play with an orchestra. Assurance, a lecture to the mother, and the arrival of a fine son effected a speedy cure in this case.

All the patients that have been mentioned recovered completely and remained well during succeeding months as long as they were followed, and the same may be said for nearly all of the twenty-seven patients in whom worry was the cause of illness. Their problems were brought out into the light and their symptoms explained by combining in hospital practice the efforts of the specialist with the traditional methods of the family

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1. The studies referred to in the address were supported in part by grants from the Josiah Macy, Jr. Foundation and from the John and Mary R. Markle Foundation.

physician. In many instances the function of the physician to guide, encourage, and console in a brotherly and tolerant spirit, had most to do in solving the problems of these patients.

The mind as well as the body must be studied in an effort to discover causes, and even when the presence of organic disease has been established, the emotional disturbances can by no means be overlooked as a possible cause in making up the total picture of illness. In fact, there are certain diseases that usually have their accompanying emotional strain which cannot be overlooked if medical service is to be skilful, adequate and satisfying to the patient.

Let us close then with the thought that the art of medicine is the application of medical science to the needs of the individual, and that in order to combine the art and the science of medicine, much study and thought must be given to the sick or injured patient as a person, to be treated as an individual problem.

CARCINOMA OF THE BRONCHUS

*Some Findings in Twenty Cases**

James A. Harrill, M. D.

Winston-Salem

Bronchogenic carcinoma is a common condition, and appears to be increasing. Textbooks of a decade ago stated that it constituted about 1 per cent of all carcinomas, while today it comprises at least 10-12 per cent of all cancers⁽¹⁾. It is found with the greatest frequency in the so-called cancer age, and is more frequent in males than in females. In this series 17 patients were males; 3, females — a ratio of 5.7:1. The average age was fifty-seven. The oldest patient was sixty-eight; the youngest, forty-two. Six were in the fourth decade, 5 in the fifth and 9 in the sixth. All 20 belonged to the white race.

There is no accurate knowledge of the etiology of bronchogenic carcinoma, although there seems, to be a definite relationship between it and pre-existing inflammation in

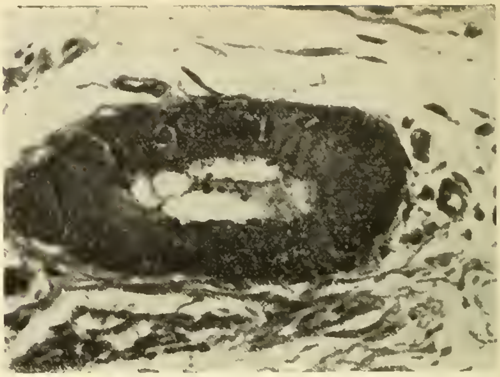

Fig. 1a. The above photomicrograph shows a terminal bronchiole with surrounding loose connective tissue. The epithelium is of the simple columnar ciliated type with the nuclei at one level. At the base of the cilia there is a dark border line formed by the basal corpuscles of the cilia. Between the columnar cells on the right and on the left, active goblet cells may be seen. In these areas there is a break in the outline of the columnar cells.

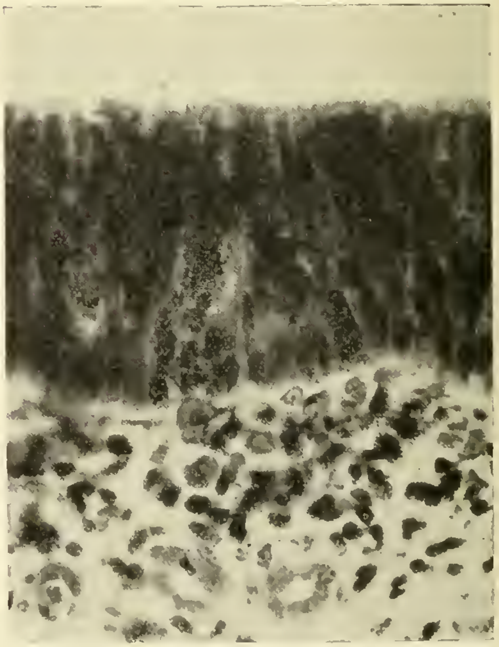

Fig. 1b. The above photomicrograph is made from a section of the upper trachea, and shows the stratified columnar cells with cilia. In one or two areas the cilia are indistinct where the goblet cells break through to the free surface at the base of cilia. The nuclei are at all levels, with an even, orderly row of cylindrical nuclei forming the basal layer, beneath which there is a thin basement membrane (Bowman's membrane). The epithelium shows no variation from the normal.

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*From the 1937 records of the Bronchoscopic Clinic, Kings County Hospital, Brooklyn, New York. The author wishes to thank Dr. M. C. Myerson, Director of the Bronchoscopic Clinic, for his permission to use these cases in this report.

Read before the Section on the Practice of Medicine, Medical Society of the State of North Carolina, Bermuda Cruise, May 18, 1939.

1. Clerf, L. H.: Carcinoma of the Bronchus, Radiology 28: 188 (April) 1937.

the lower respiratory tract(2). A family history of cancer was obtained in one case.

Histologically the bronchial mucosa consists of a layer of ciliated columnar cells resting on a basal cell layer of ovoid cells. Deep beneath the basal cell layer lies the sub-mucosal tissue, consisting of areolar, fibrous and elastic tissue, and containing numerous mucous glands. (Fig. 1.)

In the presence of chronic inflammatory processes in the bronchi, the ciliated columnar epithelium is often found to change to squamous-celled epithelium. Ormerod(3) has demonstrated the change from one type to the other in a single field. Fried(4) considers the basal cell layer responsible for the regenerative processes. The pathology of these tumors has been of interest to pathologists for many years, but they have not agreed upon which of the first two layers is responsible for the formation of squamous-celled carcinoma. The adenocarcinomas probably arise in the mucous glands of the submucosal layer. Halpert(5) states that all bronchogenic carcinomas arise from the "reserve cells" of the basal cell layer by atypical proliferation.

The macroscopic appearance of the tumors in 19 cases could be classified as fungating, submucous and polypoid. Twelve presented themselves as fungating, friable masses; five as submucous growths; two as polypoid; and the twentieth in the series was undetermined.

As to location, the distribution was fairly even. Eleven were located on the right side and nine on the left. Seventeen were located in the main bronchi and were visualized by bronchoscopy. The remaining three originated in a peripheral bronchus. (Fig. 2.)

The local pulmonary and general symptoms, by themselves, are not diagnostic. When cough, with or without sputum, hemoptysis and dyspnea, occurs for the first time in an individual of the cancer age, especially when associated with pain, carcinoma of the lung should be highly considered.

Cough of duration from one month to ten years was present in 18 (90 per cent) of the cases, and was found to be the most constant symptom. It was productive in 13 cases (70 per cent).

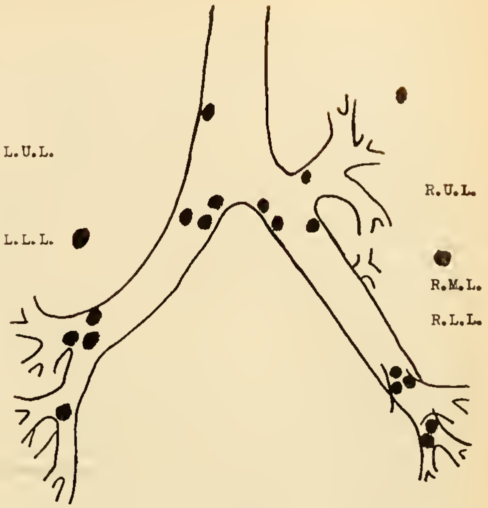

Fig. 2. Distribution according to the side involved and the area from which biopsy was taken.

The second most prominent symptom was chest pain. This occurred in 14 (70 per cent) of the cases. Pain due to carcinoma of the lung is found to be more continuous than that due to any other intrathoracic condition, with the possible exception of aortic aneurysm. It has been said that its persistency and intensity almost puts it in a class by itself. The pain in 9 cases was referred to the side of the lesion. In 2 cases it was referred to both sides of the chest. In the remaining 3 cases, the historian only mentioned that pain in the chest was present. In 2 cases chest pain was the only pulmonary symptom.

Hemoptysis was present in 10 cases (50 per cent), ranging in duration from one month to six years. It is interesting to speculate as to the possibility of a benign adenoma undergoing malignant changes in the bronchus of the patient who had hemoptysis for six years.

Dyspnea was present in 4 cases (20 per cent), and occurred late in the course of the disease.

Of the general symptoms, loss of weight, weakness, and night sweats, in the order mentioned, were the most prominent. Only in few of the cases did the general symptoms cause the patient to seek hospitalization.

Other than thoracic pain, symptoms suggestive of metastasis to the ribs were present in 2 cases, to the cervical vertebrae in 1, to the thoracic vertebrae in 1, to the head of

2. Miller, J. A., in Musser, J. H: Internal Medicine, Philadelphia. Lea and Febiger, 1932, p. 616.
3. Ormerod, F. C.: The Pathology and Treatment of Carcinoma of the Bronchus, J. Laryng. and Otol. 52:733 (Nov.) 1937.
4. Fried, B. M.: Primary Carcinoma of the Lung, Baltimore, Williams and Wilkins, 1932, p. 46.
5. Halpert, B., cited by Ochsner and DeBakey (9).

the femur in 1, to the pelvis in 2, and to the brain in 1.

In these cases the recorded physical findings, together with the history, suggested the presence of carcinoma, tuberculosis, bronchiectasis, empyema or pneumonia.

No physical signs are pathognomonic of this disease, and cancer is capable, depending upon its size and location, of imitating any disease found within the chest. The most common condition with which it is confused is tuberculosis. Twenty-five per cent of the cases in this series were clinically diagnosed as tuberculosis. This is easy to understand when we stop to consider that these two conditions have symptoms, signs and roentgenographic appearances in common. Roentgenographic appearances that occur in tuberculosis and are not seen in untreated cancer are fibrosis and calcification; yet it must be remembered that both diseases may be present in the same patient and that one positive sputum is at times misleading. One positive sputum may be a laboratory error, or the neoplasm may invade an old tuberculous encapsulated focus and liberate a few bacilli. Repeated search for the presence or absence of tubercle bacilli is most important. The diagnosis of tuberculosis as final on one positive sputum with roentgenographic findings of atelectasis, consolidation, cavitation or nodulation may deprive a cancer patient of his chance for recovery. Two of the patients in this series had one positive sputum.

In reviewing 1286 autopsy reports at Sea View Hospital, Schwartz and Auerback(6) found that thirty-two patients sent to the hospital as cases of advanced pulmonary tuberculosis were found to have non-tuberculous pulmonary disease without any evidence of tuberculosis. Sixteen, or 50 per cent of these cases, were classified as bronchogenic carcinoma. In 12 (75 per cent) the new growth occurred in the large bronchi. Anatomic review of the gross pathological reports indicate that in 9 cases (75 per cent) the growths were within reach of the bronchoscope.

An example of the difficulties of diagnosis is found in one of the first reported cases, by Graves(7), one hundred years ago. Since his time the history, course of the disease, and physical findings have remained the same, but several important diagnostic aids have been added. These procedures which do not require metastasis before they can be used are:

(1) Roentgen-ray picture and fluoroscopic examination.
(2) Bronchoscopic examination and biopsy.
(3) Lung puncture.
(4) Microscopic examination of biopsy and lung puncture specimens.

The fluoroscopic examination and roentgen-ray pictures are of great value and should be the first step toward a positive diagnosis. The fluoroscope is of help in revealing bronchial ball valve block and in differentiating between mediastinal and lung neoplasms. Serial roentgenography is of much more value than a single film.

Varied pictures are obtained, depending upon the size and location of the neoplasm, and they may be similar to those seen in other lung conditions. Lobar consolidations may be produced by tuberculosis, pneumonia, abscess, and cancer. Cavities may be produced by abscess, tuberculosis, bronchiectasis, cancer, and gangrene. Miliary deposits may be caused by tuberculosis, cancer, broncho-pneumonia or pneumoconiosis. Large nodules are formed by neoplasm, tuberculosis or silicosis. Atelectasis may be secondary to tuberculosis, cancer, bronchiectasis, endobronchial neoplasm or foreign body. Fibrosis and calcification are not seen in cancer, although fibrosis may be present in those cases which have received x-ray or radium therapy.

In this series, from the x-ray findings, 16 cases were diagnosed as new growths, 2 as inflammatory, and in 2 the diagnosis was deferred. Masses were seen in 8, atelectasis in 9, pneumonic consolidation in 1, and pleural effusion in 3. X-ray evidence of metastasis was present in 5 cases.

Bronchoscopy with biopsy is the only method that we possess to make a positive diagnosis early. In 70-85 per cent of cases a positive diagnosis can be made by bronchoscopy and biopsy.

These tumors present a varied bronchoscopic appearance. In the majority of the cases, tumor tissue is encountered. In others, where the lesion is submucosal, the bronchus

6. Schwartz, S. and Auerback, O.: Non-Tuberculous Pulmonary Disease Simulating Pulmonary Tuberculosis. Sea View Hospital Quarterly Bulletin, vol. 4, no. 1 (Oct.) 1938.

7. Graves, R. J.: A System of Clinical Medicine. Dublin, Fannin and Co., 1843, p. 792.

is narrowed, the mucosa thickened and inflamed, and evidence of mediastinal involvement may be present or absent. In those cases where the tumor is beyond a third order bronchus, the bronchoscopic picture may be normal or evidence of mediastinal involvement may be present, varying from encroachment of lumen by metastatic hilar lymph nodes to widened, thickened, and infiltrated carina or a "frozen" tracheo-bronchial tree.

Tumor masses were seen in 10 cases. In 5, the growth was submucosal. In 2, friable, polypoid masses were seen. In 17 of the cases, positive biopsies were obtained by bronchoscopy. In the remaining 3 cases, one presented purulent secretions coming from the right upper lobe bronchus; another showed post-irradiation changes in the bronchial mucosa (X-ray therapy had been given in another hospital); in the third case, the tracheo-bronchial tree was normal and a lobectomy was performed. Bronchoscopy was repeated in 4 cases—3 for a second biopsy, and the fourth for bronchoscopic observations following five months of x-ray therapy.

While bronchoscopy does not determine the extent of the lesion, it definitely aids in establishing a diagnosis and assists the thoracic surgeon in selecting the cases which are best suited for operation.

Aspiration biopsies were not made on these patients. Binkley(8) reports 60 per cent positive biopsies in 56 cases. There are usually no harmful after-effects, and this procedure should be used more often if the pathologist is capable and willing to commit himself on the basis of a few cells.

The value of pathological examination of biopsy and lung puncture specimens needs no discussion.

In three cases pleural effusions were present, and in one cancer cells were demonstrated by the Mandelbaum method.

Exploratory thoracotomy is a valuable method of establishing a diagnosis and of determining whether operative removal of the tumor is possible and justifiable.

It is unfortunate that, owing to a late arrival at a positive diagnosis, treatment must often be directed toward relief of symptoms. Five patients received x-ray therapy, and these patients lived an average of two months longer than those who did not receive this form of treatment. One patient lived five months after receiving x-ray therapy. One case was suitable for operation, and expired eight days after lobectomy.

The question of what type of treatment to use after a diagnosis has been made is important. Because of the recent advancements and lowered mortality in thoracic surgery, surgery is the treatment of choice in those cases where the growth, from the endoscopic point of view, is located in such a position that a lobectomy or pneumonectomy will remove it, if the physical condition of the patient will permit either of these procedures.

To date there are 88 reported cases of total pneumonectomy for neoplastic disease. Of the 88 cases 56 (63.6 per cent) died, and 32 (36.4 per cent) recovered. Of the patients who recovered, five subsequently died of metastasis or from other causes(9).

Other methods of treatment are:

(1) Irradiation therapy.
(2) Bronchoscopic removal with or without implantation of radium or radon.
(3) Exploratory thoracotomy with implantation of radium or radon.

The value of x-ray therapy is a disputed question. In early cases, deep x-ray therapy and local application of radium or radon occasionally lead to a cure. In advanced tumors only temporary improvement is obtained, but several months may be added to the patient's life.

Bronchoscopic removal of the tumor is not the procedure of choice, and has been supplanted by other forms of treatment. Bronchoscopic implantation of radon seeds is probably of value, but no definite conclusions can be drawn at the present time regarding its merit.

Favorable results have been reported by radon implantation following thoracotomy.

Conclusions

(1) Symptoms and physical findings are not diagnostic.

(2) Early diagnosis can be made in a large number of cases by close cooperation.

(3) 70-85 per cent of cases can be diagnosed early by x-ray and bronchoscopy with biopsy or lung puncture.

(4) Surgery is the treatment of choice.

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8. Binkley, J. S., cited by Ochsner and DeBakey (9).

9. Ochsner, A., and DeBakey, M.: Primary Pulmonary Malignancy. Treatment by Total Pneumonectomy. Surg., Gynec., and Obst. 68:435 (Feb. 15) 1939.

METRAZOL IN THE TREATMENT OF MENTAL DISEASE

and

A Report on its Use at the State Hospital

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Asst. Supt. State Hospital, Morganton

In 1935 von Meduna of Budapest, Hungary, gave a report on the treatment of schizophrenia by means of artificially induced convulsions, using Metrazol as the convulsive agent. The remission rate claimed exceeded by far the results attained with the usual forms of treatment, and naturally the entire medical profession as well as the laity became intensely interested in the procedure. In outlining the treatment he made the following suggestions:

Careful physical examination, with special emphasis on the cardiovascular system, should first be made. He listed as contraindications evidence of coronary disease, history of brain injury, acute febrile disturbance, menstruation, etc. The treatment should be given in the morning, breakfast being withheld. An initial dose of 5 cc. of the 10 per cent aqueous solution is administered intravenously, using as large calibre needle as possible to insure rapid injection. He suggested that a total of twenty convulsions be given at the rate of two or three each week, and suggested that the maximum dose should not exceed 16 cc.

The convulsion is similar to the grand mal seizure of epilepsy, and follows a fairly uniform course. Within ten seconds after injection the patient gasps for breath, blinks his eyelids, loses consciousness, and then passes into the tonic phase of the convulsion. All the muscles of the body are in a state of extreme contraction, the pupils are dilated, and the patient becomes cyanotic. Within twenty or twenty-five seconds the clonic phase begins and continues for an additional twenty or twenty-five seconds. During these phases of the convulsion breathing is entirely suspended. Following the clonic phase the patient is in a state of collapse; cyanosis is extreme and stertorous breathing begins, with rapid return to normal. He is usually in a confused state for an hour or so following the convulsion, when he returns to his pre-convulsive state and is able to resume his usual activities.

It is next to impossible to prove the results of this treatment by statistics, for the following reasons:

1. It is difficult to establish a satisfactory control system. The reasons for this are innumerable, but of primary importance is the wide variation in the duration of individual untreated attacks. We often see cases, especially of manic depressive insanity, clear up in a few days; but we also see cases presenting the same classical symptoms persist for years.

2. Another difficulty in determining results is the lack of uniformity in diagnosis. It seems to those of us who are treating the mentally ill exclusively that we see more and more cases presenting a mixture of schizoid and manic depressive symptoms, and in making the diagnosis we naturally incline to the psychosis with the dominating symptoms. Therefore, in order to arrive at a definite opinion as to the efficacy of this or any other treatment in a given psychosis, only clear-cut cases should be included. In our series many cases showing a mixture of symptoms have been included; consequently, the statistics are of more interest from the standpoint of mental illness in general than from the standpoint of schizophrenia or manic depressive disease in particular.

3. Perhaps the greatest difficulty in appraising results is due to the lack of uniformity in interpretation of results, and until some definite standard is used by all observers the results claimed cannot be conclusive. In tabulating our results we have used the classification suggested by Barbato as follows:

(a)—*Full Remission:* Return to previous level of adjustment; complete insight; no defect in content or affect; and ability to resume former employment.

(b)—*Social Remission:* One of above requirements lacking.

(c)—*Improved:* Two of above requirements lacking.

(d)—*Not Improved.*

Experiences at the State Hospital at Morganton

Much has been written about the size dose required. Our custom has been to give 3½ cc. as the initial dose, and in over 75 per cent

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Read before the Ninth District Medical Society of the State of North Carolina at Morganton, September 28, 1939.

of our cases this dose has produced a convulsion. The patients as a rule gradually develop a tolerance for the drug, and when the dose fails to produce a convulsion it is our custom to increase it by ½ cc. on the next treatment day. A decided difference in individual susceptibility has been noted; and, while we have had several patients react throughout the entire series of twenty convulsions to a dose held at 3½ cc., we have used a dose as large as 11 cc.

In our earlier experience we gave three treatments weekly throughout the entire series, but we have since modified this practice to some extent. We are now giving the first five or six convulsions at this rate, and then, if improvement is noted, we gradually extend the interval between treatments until no further improvement occurs.

It has been suggested that a total of twenty convulsions should be produced, but our experience has been that no arbitrary rule should be followed. If improvement is going to occur it usually does so after a relatively few convulsions—ten or less. In only a few cases have we observed a sustained improvement after this number. Almost without exception all patients object violently to the treatment—describe it as a horrible and terrifying experience—and it is our general impression that more can be done by psychotherapy than by repeated convulsive seizures after some improvement has occurred and the patient has become more accessible and developed some insight. It has been suggested that fear of the shock may be the beneficial factor in the improvement noted in these patients, but other authors have disproved this claim.

We have had only one serious accident in over 2000 convulsions. One male patient suffered a fracture of the neck of both femurs in his first convulsion. Dislocated jaws have been noted frequently, but are always easily reduced when the tonic phase of the convulsion has subsided. One patient after her sixth convulsion developed broncho-pneumonia and died sometime later. We do not feel this could be directly attributed to the treatment. Several observers have reported fractures of the bodies of the dorsal vertebrae, many of which produce no symptoms. So far we have been fortunate in not running into this complication.

Relapse, after apparent remission, has been observed in our series in several cases. This has been noted in several fairly chronic cases, and in these two or more series of treatments have been given with the same successful result. In these cases we have now adopted the policy of "watchful waiting"; and with the first indication of relapse we give two or three treatments, which usually serve to hold the patient on a fairly even keel.

The treatment was begun here March 4, 1938, and to date we have had 155 cases under treatment. This report deals only with the first 100 consecutive cases. In six instances it was discontinued because of some contra-indication. We have made no attempt to restrict its application to favorable cases only, but have given it to many who from their chronicity and the nature of their symptoms offered little hope of improvement or recovery. As has been stated, cases of more than two years' duration offer a poor prognosis. In our series 52 cases ill two years or longer were treated, and this, naturally, will affect the recovery rate; yet, in some of these we have observed distinct improvement.

The following tables are presented to complete the statistical picture:

TABLE 1

Results in 91 Cases of Schizophrenia Classified With Respect to Duration of Illness Prior to Beginning Treatment

	Total	*Full Remission*		*Social Remission*		*Improved*		*Not Improved*	
Duration	*No.*	*No.*	*Per Cent*	*No.*	*Per Cent*	*No.*	*Per Cent*	*No.*	*Per Cent*
6 months or less	26	7	26.9	11	42.3	8	30.8	0	0
6 months to 2 yrs.	25	7	28	8	32	8	32	2	8
2 yrs. to 5 yrs.	25	3	12	6	24	6	24	10	40
Over 5 years	15	0	0	1	6.7	7	46.7	7	46.6
Total No.	91	17	18.7	26	28.5	29	31.9	19	20.9

Comment

It is possible that we have been somewhat less generous in our interpretation of results than some other workers, but by combining full and social remissions we see the following results:

In the group ill six months or less we obtained a remission rate of 69 per cent, while 31 per cent improved. None of these cases failed to improve. In the group ill six months to two years the remission rate was 60 per cent. Thirty-two per cent improved, while 8 per cent failed to show improvement.

In the group with a duration of two to five years the remission rate dropped to 36 per cent, while an additional 24 per cent showed improvement. In this group 40 per cent failed to show any improvement. In the group ill five years or longer we obtained a remission in only one case, or 7 per cent of the total. Forty-seven per cent improved, while 46 per cent failed to improve. It will be seen from this that results are inversely proportional to the duration of illness.

TABLE 2

Results in 91 Unselected Cases of Schizophrenia According to Type

	Total	*Full Remission*		*Social Remission*		*Improved*		*Not Improved*	
Type	*No.*	*No.*	*Per Cent*	*No.*	*Per Cent*	*No.*	*Per Cent*	*No.*	*Per Cent*
Hebephrenic	27	3	11.1	4	14.9	11	40.7	9	33.3
Catatonic	51	13	25.5	19	37.3	12	23.5	7	13.7
Paranoid	13	1	7.7	3	23.1	6	46.1	3	23.1

Comment

It has been stated by practically all observers that the catatonic type of schizophrenia is more apt to respond to this treatment than the other types, and this is demonstrated in our series, as shown in Table 2.

TABLE 3

Results in 9 Cases of Manic Depressive Disease Classified With Respect to Duration of Illness Prior to Beginning Treatment

		Total	*Full Remission*		*Social Remission*		*Improved*		*Not Improved*	
Duration		*No.*	*No.*	*Per Ct.*	*No.*	*Per Ct.*	*No.*	*Per Ct.*	*No.*	*Per Ct.*
6 mos. or less	Man.	2	2	100	0	0	0	0	0	0
	Dep.	0	0	0	0	0	0	0	0	0
6 mos. to 2 years	Man.	3	2	66.6	1	33.3	0	0	0	0
	Dep.	0	0	0	0	0	0	0	0	0
2 years to 5 years	Man.	0	0	0	0	0	0	0	0	0
	Dep.	1	1	100	0	0	0	0	0	0
Over 5 years	Man.	2	1	50	1	50	0	0	0	0
	Dep.	1	0	0	1	100	0	0	0	0
Total Number		0	6	66.7	3	33.3	0	0	0	0

Comment

Although the number of cases in this series is small, the results obtained are striking. Remissions were obtained in all cases regardless of duration, and there seemed to be no difference in result with respect to the manic or depressive phase of the disease. Of course, it is impossible to say with assurance ,what the outcome of the cases of short duration would have been without treatment, but in the four chronic cases who remitted and who had been ill two years or longer, the remission seemed to be the direct result of treatment.

TABLE 4

Results in 91 Unselected Cases of Schizophrenia Regardless of Duration of Illness

	Number	*Percentage*
Full Remission	17	18.7
Social Remission	26	28.6
Improved	29	31.8
Not Improved	19	20.9

Comment

Although nothing very startling is shown by this table, it should be kept in mind that in the group of 91 cases 44 per cent were considered chronic, with a duration of two years or longer. In spite of this our general impression is that, taking the group as a whole and considering all of the facts, better results have been obtained than would be expected in the usual treatment of these cases.

We have made an effort to compare the duration of hospitalization in a group of treated cases with a group of untreated cases as similar as could be obtained, and we find a material shortening of the time spent in the hospital. For example, in 16 cases, ill six months or less before admission, the average hospitalization period was three months and four days with treatment; while in a similar number of cases with this same duration of illness the average hospitalization period was eight months and twenty-three days without Metrazol treatment. Similarly, in a group of 12 cases, ill six months to two years before admission, the average stay in the hospital was six months and twenty-five days with Metrazol; while in a similar group of untreated cases the average hospitalization was eighteen months and seventeen days. In the treated cases in this group the average stay in the hospital after treatment was two months and eleven days. Of course, we are fully aware of the expected individual variation in these cases, but these figures do seem to shorten materially the period of hospitalization.

It seems to us that, although much can be learned from statistics, the observations by unbiased workers on the reactions and rehabilitation of the individual cases is of tremendous importance. We have seen many cases make almost dramatic improvement, whose previous appearance and reactions indicated a gradually developing deterioration extending over a period of months and even years. The most gratifying remark we have heard from relatives of patients has been "Doctor, I had given up hope. I never expected to see her this well again." This has been heard many times since the Metrazol treatment was begun. While there may be some doubt as to the completeness or the permanence of the recovery of these patients, we are convinced that the treatment is beneficial in many cases.

Summary

1. Metrazol therapy is not a panacea for all mental ills, but it is a distinct adjunct to psychiatric therapy. Its greatest field of usefulness seems to be in stuporous, inaccessible catatonics.
2. In selected cases of schizophrenia remissions may be expected in 65 to 70 per cent, as compared with 40 per cent in untreated cases. If improvement is going to occur it usually begins after a relatively few convulsions.
3. In chronic and apparently deteriorated cases substantial improvement frequently occurs, and subsequent hospitalization is made less difficult and expensive.
4. The period of hospitalization seems to be definitely shortened.

THE DIAGNOSIS AND TREATMENT OF THE ANEMIAS

Robert P. Morehead, M.D.

An anemia occurs when the hemoglobin of the blood falls below the normal limit. Since the entire amount of hemoglobin in the body is contained in the red blood cells, an intelligent understanding of their metamorphosis is prerequisite to a proper understanding of hemoglobin metabolism and the etiology and pathogenesis of the anemias.

Red blood cells are derived from the sinusoidal endothelium of the bone marrow, erythropoiesis being an intravascular phenomon.(1) From the sinusoidal endothelium comes the megaloblast, the most primitive of the erythrocytes. The megaloblast is an unusual cell in that it requires for maturation those substances essential for the growth of most cells, plus an anti-anemic principle. The anti-anemic principle is formed by the interaction of an extrinsic factor from the food with an intrinsic factor from the gastric and duodenal glands. After formation, it is absorbed by the stomach and intestine and is stored in the liver and, to a lesser degree, in other organs.

The intrinsic and extrinsic factors have not been identified chemically but the former is probably enzymic in nature(2), while the latter is closely associated with protein(3). Little is known about the anti-anemic factor which is stored in the liver except that it is essential for the maturation of erythrocytes from the megaloblastic stage.

When there is a deficiency in the anti-anemic factor, the bone marrow undergoes an erythroblastic type of hyperplasia, the degree of hyperplasia being in direct proportion to the number of circulating erythrocytes(4). The hyperplasia is confined to the young or megaloblastic erythrocytes, and maturation does not take place. The primitive red blood cells die *in situ*, hemoglobin is set free, iron is split off, and bile pigment formed. This results in an increase in the serum bilirubin of the blood. This, along with the profound anemia, accounts for the lemon yellow color commonly seen in pernicious anemia. Those cells that do undergo complete maturation have an increased amount of hemoglobin to transport, since iron is present in normal amount. In order to cope with this situation, the concentration of hemoglobin becomes greater in each cell (the cell becoming hyperchromic) and there is an increase in the size of cells (cells becoming macrocytic). The color and volume indexes are obviously increased. The resulting anemia is a hyperchromic macrocytic anemia.

A hyperchromic macrocytic anemia may result from: (1) a deficiency in the intrinsic factor—e. g., atrophy of the gastric mucosa in pernicious anemia, gastrectomy, infiltrating carcinoma, etc.; (2) a deficiency in the extrinsic factor—e. g., sprue; (3) failure of the intestine to absorb the anti-anemic principal—e. g., ileitis, intestinal stricture, gastro-colic fistulae; or (4) failure on the part of the liver to store the anti-anemic factor

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From the Department of Pathology, School of Medical Sciences, Wake Forest College. Read before the First General Session of the Medical Society of the State of North Carolina, Bermuda Cruise, May 10, 1939.

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2. Wilkarson, J. F., and Klein, L.: Relationship Between Anti-Anemic Principle and Liver, Lancet 2:629, 1933.
3. Castle, W. B., and Minot, G. R.: A Pathological Physiological and Clinical Description of the Anemias, New York, Oxford Press, 1936.
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—e. g., the late stages of portal cirrhosis, toxemias of pregnancy, etc.

One may readily see that there are many hyperchromic macrocytic anemias, but the most important of these is pernicious or Addisonian anemia. The etiological factor in this disease is in all probability a deficiency in the intrinsic factor resulting from atrophy of the gastric mucosa. Other products of gastric secretion suffer also, particularly hydrochloric acid, and a diagnosis of pernicious anemia in its presence is likely to be erroneous. The symptoms are those of anemia and gastro-intestinal disturbances. To these may be added the all important changes in the nervous system. In Herman's series, 72.5 per cent had spinal cord involvement (postero-lateral sclerosis), and 15.7 per cent showed mental changes(5). The neurological lesions are probably the result of anoxemia of the nervous tissue along with a deficiency in some substance necessary for the health of nerve cells. Since this is a true hyperchromic macrocytic anemia, the laboratory findings are those which were discussed in preceding paragraphs.

The treatment of macrocytic anemias resolves itself into supplying the existing deficiency. If the deficiency is in the extrinsic factor—e. g., sprue—therapy will consist in supplying a diet rich in protein (beef contains large amounts of the extrinsic factor). If the deficiency is the result of failure of the gastric mucosa to elaborate the intrinsic factor, or faulty absorption of the anti-anemic factor by the intestine, or its storage by the liver, the treatment will consist of an attempt to correct the underlying condition, in addition to supplying the deficiency.

From a study of the pathological physiology of this condition, it is obvious that the therapeutic agents are stomach and liver. The latter is the more commonly used and effective agent in macrocytic anemias, but cases are seen which are refractive to liver and respond promptly to ventriculin (dessicated hog stomach). The dose of liver, like any other remedial agent, is that amount which will produce the desired therapeutic effect. Attempts to test the liver principle have been unsuccessful, and the substance must be assayed biologically. The only satisfactory subject thus far has been the untreated pernicious patient showing a red blood cell count of three million or less. The form in which the factor is given matters little; but the extracts for intramuscular injection are more convenient in that the dose is given at rather infrequent intervals. Adequate treatment is of paramount importance, and the criteria for adequacy include elevations of erythrocyte and hemoglobin values to normal levels and maintenance of the normal size of the erythrocytes. Reticuloyte counts should be performed daily until a satisfactory response has been obtained. The color index should be determined weekly, and, if it should fall below the normal level, supplementary iron therapy instituted.

The second great group of anemias are the hypochromic anemias. These are the anemias in which there is a deficiency in hemoglobin. The hypochromic anemias are usually a symptom of some other disease, and they constitute 95 per cent of all of the anemias. They may be defined as a state of the blood in which the loss of hemoglobin has exceeded the loss of erythrocytes. If the blood loss is acute—e. g., acute hemorrhage, the resulting anemia will be hypochromic and normocytic. On the other hand, if the anemia becomes chronic cells of normal size (normocytes) are no longer needed to carry the hemoglobin and they become smaller than normal (microcytes). The resulting anemia will be hypochromic and microcytic. The anemias of accelerated blood destruction—(e. g., familial hemolytic icterus, infections, and poisons); and depression of marrow function(e. g., idiopathic aplastic anemia, cachexia, and malignant infiltration, etc.,) will also produce a hypochromic and microcytic type of anemia.

Since hypochromic anemias are the result of a deficiency in hemoglobin, iron is obviously the remedial agent. In spite of the tremendous amount of work done, there is no agreement regarding the minimum amount of dietary iron required by a healthy adult. We do know however that "for optimum regeneration of hemoglobin in patients with anemia, much greater amounts of medicinal iron are required than are necessary for the synthesis of hemoglobin."(6) It appears that an excess is needed because of inefficient absorption or because after absorption only a portion of the metal is put into physiologic use. There appears to be no correlation be-

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5. Herman, M., Most, H., and Jatliffe, N.: Phychoses Associated with Pernicious Anemia., Arch. Neurol. and Psychiat. 38: 318 (Aug.) 1937.

6. Fowler, W. M., and Barer, A. P.: Retention and Utilization of Orally Administered Iron, Arch. Int. Med. 59: 561 (April) 1937.

tween the retention and utilization for new hemoglobin of orally administered iron(6). We give all patients suffering from hypochromic anemias 100 grains of iron and ammonium sulphate daily until the maximum hemoglobin content is obtained.

Liver and copper have no place in the treatment of hypochromic anemias. The addition of copper leads to diminished retention of iron, but also to slightly increased utilization. The addition of liver is followed by slightly decreased iron retention.

Commercial liver preparations, apart from their iron content, are wholly ineffective in the treatment of hypochromic anemias.

It is a well known fact that the peripheral blood does not always reflect accurately the condition of the hematopoietic system. The blood picture is the result of many complex factors which are concerned with the growth, destruction, and liberation of the various elements of the blood. Diseases of the hematopoietic system may therefore occur without changes in the peripheral blood, and likewise diseases not primarily concerned with hematopoiesis may produce changes that suggest disease of the blood-forming organs. From these considerations it becomes evident that in some cases it would be desirable to study the organs of blood formation during life in conjunction with studies of the peripheral blood. By correlation of the two an accurate diagnosis can usually be made and an intelligent therapeutic campaign instituted.

A method which has been found superior to the sternal puncture method, and which in our hands has been followed by no complications, is as follows:(7)

"Using rigid aseptic technique, the skin and subcutaneous tissue are infiltrated with a 2 per cent solution of procaine hydrochloride for 2 cm. on either side of the midline and for a distance of 3 cm. below and above the level of the fourth rib. A short incision is then made in the midline down to but not through the periosteum. A small needle is introduced between the bone and periosteum and a small bleb produced. The subperiosteal space is then infiltrated over an area of about 2 cm. A small incision is then made in the periosteum and both sides elevated. The spike of a 1 cm. trephine is introduced through the ventral table of the sternum and a shallow groove produced by a gentle rotary movement of the trephine. The instrument is withdrawn, the spike removed (this is a precaution against entering the mediastinum), the trephine reinserted and the cortex penetrated; the patient experiences a slight sensation of pressure as the marrow cavity is entered. The trephine is gently rocked to break up the trabeculae and the button of bone removed and placed immediately in nine parts of the following solution to which one part 10 per cent formalin has been added immediately before use:

"Potassium bichromate	2.5 gm.
Mercuric chloride	.5 gm.
Distilled water	100 cc.

"A few small fragments of marrow are then removed, with a sharp spoon curette, and handed to an assistant who places several in the fixing solution, the remainder being used for smears. The latter are prepared by gently grasping the fragment with fine forceps and pulling it evenly over clean slides. As the smear dries it is immersed in pure methyl alcohol for ten seconds. In the meantime the surgeon packs the marrow cavity with gauze until bleeding stops. The periosteum is then allowed to cover the wound and the skin is closed with No. 00 plain catgut." The material is immediately sent to the pathologist for microscopic study.

Conclusion

In order to study an anemia properly one must first determine the size and hemoglobin content of the cells as compared with the normal. This is done by estimating the color and volume indexes. It is also of advantage to know whether the anemia is the result of increased blood destruction or decreased blood formation. The icterus index, along with the reticulocyte count, affords this information, since the former is the most reliable index of peripheral blood destruction, and the latter of blood formation. If the peripheral blood does not give enough information we believe that the physician is then justified in trephining the sternum.

During the past ten years, much progress has been made in the diagnosis and treatment of the anemias. The treatment of an anemia today is as specific as the treatment of an infectious disease. Through a little additional effort on the part of the physician, the patient will reap much benefit from the modern march of hematology.

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7. Morehead, R. P.: Biopsy of The Sternal Bone Marrow, South. Med. and Surg. 99: 555 (Nov.) 1937.

THE MENTAL HYGIENE OF CHILDHOOD IN THE PUBLIC HEALTH PROGRAM

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DURHAM

The Points in Common in Physical and Mental Hygiene

The fields of physical and mental hygiene overlap, and the special workers in public health and those in mental hygiene have a great deal in common. Both sets of workers are grounded in medicine, but are socially minded and frankly view their activities as related to those of social agencies. Both are interested in environments as well as in persons.

The mainsprings of both the physical and the mental health programs are derived from a common social attitude and humanitarianism. Both the mental hygienists and the public health workers consider their affairs community affairs. Much of the work and organization in psychiatry and mental hygiene, as well as in public health, are carried on as governmental responsibilities and functions. The public health worker is called upon to do all that medical work in a community which is left undone by the private practice of medicine. At the present time in most communities the work in mental hygiene is left undone; so the public health worker is commissioned to assume this responsibility. Among the responsibilities of a public health worker are not only the preservation and promotion of both physical *and mental* health, but often the actual care and management, at least in emergency, of mental and nervous patients.

It is no wonder that from both theoretical and practical considerations public health has often considered incorporating mental hygiene in its program, and sometimes has even done so. With such dread communicable diseases as typhoid, diphtheria, smallpox, etc., under control, public health may be looking around for new fields to conquer. If one accepts Winslow's definition of public health as "the art and science of preventing disease, prolonging life and promoting physical *and mental* efficiency through organized community effort," then public health has already assumed a responsibility for mental hygiene. Certainly, there should be a close relationship between the two.

The Points of Difference

But it is necessary to remember the points of difference between physical and mental hygiene as well as the points in common. Mental hygiene is a vast, difficult and uncrystallized subject which has its own concepts and techniques. Psychiatry and mental hygiene diverge both from medicine and from public health in going beyond physical and chemical and physiological factors into imponderable psychological ones which demand a different point of view and a shift in approach. Factors in mental, nervous and emotional disorders are not only mixed by being partly "physical" and partly "mental", but are also apt to be multiple, complex and variable. Each patient has to be individualized. Mental factors do not lend themselves to the mass approach and to the mass action that is customary in most public health work. It is a well-known fact of public health practice that preventive measures can be applied best where the factors are simple and specific and where causal relations are best understood. One cannot line up children and inject them with mental hygiene as with diphtheria toxoid, for example; or vaccinate them against mental and nervous breakdowns. But, borrowing a figure of speech from public health, children can be immunized against some harmful situations as well as against some physical diseases. It follows that there will always need to be special workers in public health and special ones in mental hygiene. Sometimes their activities will be in common, sometimes they will overlap, and sometimes they will be divergent. It seems not only very desirable but very necessary that the two sets of workers understand each other and their respective fields and activities.

The physical and mental hygiene of infancy and childhood especially overlap—indeed, are inseparable. In order to limit a large subject, this discussion is going to concentrate upon the mental hygiene of childhood in the public health program.

The Incidental Benefits to Mental Health of Certain Public Health Procedures

So close is the association and so great is the interaction of body and mind that any-

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thing that promotes physical health at the same time promotes mental health, and vice versa. It is difficult sometimes to say where physical hygiene leaves off and mental hygiene begins. The ancient ideal of a sound mind in a sound body still holds, and should still be sought.

Some of the public health activities and interests that have incidentally increased mental health, especially those that have had a bearing on the mental hygiene of infants and children, might be mentioned. All of the public health activities that improve the environment—such as slum clearance, better housing, better food and water supplies and inspections, and better sewerage disposal—have vastly promoted mental as well as physical health and happiness. The public health control of communicable diseases has not only prevented death, but has conserved mental and physical health, especially of children. The control of the diarrheal diseases of infants without a doubt has benefited the mental as well as the physical health of the infant and the child There are many specific diseases in which the infective agent has a special predilection for the brain. Any decrease in the incidence of these disorders that public health and modern medicine have been able to bring about must certainly be considered a great contribution to mental hygiene.

Venereal infections in general and syphilitic infections in particular are great ravagers and destroyers not only of the nervous system, but also, directly and indirectly, of the mind; so that mental hygiene considers venereal disease control part of its program, as does public health. Quoting Smillie: "The most concrete results in prevention of any type of mental disease have been secured through prevention of syphilis, or more productive still, through adequate treatment of early syphilis." It is heartening to those interested in the mental hygiene of infants and children to see the legislation in North Carolina requiring serological tests of expectant mothers, and the increased activities in the diagnosis and treatment of congenital syphilis.

Nutritional deficiencies cause mental and nervous diseases. The outstanding example of this is pellagra. Mental hygiene will reap benefits from the public health work and education along these lines.

Numerous cases of intra-uterine or prenatal maldevelopments are encountered among infants and children in neurology and psychiatry. Theoretically, and probably practically, the number of these will be diminished by the increased attention public health is giving to maternal welfare. Some neuropsychiatrists see in birth injuries one of the greatest sources of serious neuropsychiatric conditions, and great hope rests in the better obstetrical care that public health is striving to bring about.

Mental Hygiene Principles of Infancy and Childhood

Only a few of the principles of mental hygiene for the infant, the pre-school child and the school child can be indicated here. Those who are interested can be referred to the sixth edition of Rosenau's text-book of PREVENTIVE MEDICINE AND HYGIENE, in which can be found a very excellent chapter on mental hygiene by A. Myerson.

The physical and the mental hygiene of the infant are one and the same. The infant needs a calm environment, a lack of overstimulation, and a chance to feed and to rest properly and to grow and develop normally. In infancy mental and physical habits are very closely associated. Good habits can be encouraged and established and, at the same time, poor ones can be avoided. One cannot distinguish those habits which belong to physical hygiene from those which are a part of mental hygiene. The baby does not need two different kinds of hygienists; rather, it needs one who is proficient in the combined physical-mental hygiene of infancy.

It is different when we come to the child. Here there is a rapid growth of that which we are accustomed to call "mind" or "behavior". Mental and emotional problems can be distinguished from physical ones. Childhood is the golden period of mental hygiene. As the twig is bent, so grows the tree. When one considers that our present psychological theories are to the effect that mental and emotional attitudes and habits, which form the very foundation and basis of the personality, are laid down in childhood, it is no wonder that the mental hygienist is tremendously interested in children and desires to start to function as a specialist in the period of childhood.

The pre-school child period extends from the time that the habits of walking, talking and elimination are fully established until the time the child goes to school regularly. It is a comparatively short period, from about the age of three until five or six, but it is a very important one from the standpoint of both physical and of mental hygiene. Physically, the diseases and injuries, perils to growth and development, that beset a young child are encountered. Mentally and emotionally, the child has to absorb in some measure the culture that the race has taken thousands of years to accumulate. The child at this period obtains mental and emotional habits and attitudes that are apt to be lifelong. During this period the child should be immunized not only against certain diseases, but also against certain experiences.

When one considers all the child has to learn, one should be tolerant and patient. The greatest lessons he has to learn are those of socialization—to adjust and to get along with other people, and also to benefit from experience. It must be remembered that play is more than recreation for the child; it is experience. The child should be taught endurance and fortitude. Discipline, to be of the right sort, has to be individualized for each child, taking into consideration his physical and temperamental make-up. Too-harsh discipline should be avoided. It may make for a crushed passivity, or for rebellion. Probably a greater peril is too little discipline, or spoiling. There has been a misinterpretation of the so-called new child psychology, in the idea that the child should express himself unhampered and unpunished. Nothing would be worse mental hygiene. Such a child would not be free, but a victim of his own whims and impulses. There would surely be continuous clashes at school and in society with the necessary conventions and perhaps later with laws.

Since there are not enough psychiatrists and mental hygienists to go around, and since the parts played by parents and the schools in the broad education of the child and in the inculcation of mental hygiene principles always need supplementing, public social and health workers have a part to play. They can make physically and mentally sanitary the environments of the home and the school. They can provide the proper facilities and setting for play. With some training in mental hygiene, public health workers can aid parents in adjusting the home life of the child to correct unhealthy habits and tendencies that might lead to serious future difficulties. This training would enable public health workers to make mental hygiene an integral part of the general public health program. At the same time, it would teach the public health workers to recognize their limitations and to elicit the aid of specialists in difficult and complex problems.

There are certain conditions that are public health problems because of their great prevalence and because the private practice of medicine unaided and without some community efforts cannot adequately cope with them. Among these are some well-known and frequent neuropsychiatric conditions. Because of their prevalence and because they demand organized efforts, mental and nervous diseases are sometimes spoken of as among the greatest of public health problems. In this country there are nearly half a million hospital beds devoted to mental and nervous diseases — more than to all other kinds of diseases combined—and each year about 100,000 new cases enter mental hospitals. With good mental hygiene, especially if it is begun in childhood, many of these mental disorders can be prevented, and with good psychiatric practices many can be modified or cured.

It has been estimated that from 2 to 4 per cent of the population are to some degree mentally or intellectually deficient, as opposed to mentally diseased. These defectives are often serious social problems.

It has also been variously estimated that from .2 to 2 per cent of the population are epileptic. Some authorities maintain that as high as four per cent of the population have a tendency to be convulsive. Most cases of epilepsy start in childhood, and this is the period in which an attempt to control the condition by adequate social and medical measures should be instituted. To do so properly will tax the combined resources and facilities of those concerned with public health and those who are interested in mental hygiene.

While there are sufficient psychiatric cases among children so that a whole new specialty of child psychiatry has been established, and while the problems in mental hygiene of children are numerous and diverse, there are few cases of major mental disorders or major psychoses. Dementia praecox and the manic-depressive psychoses represent the two greatest major psychoses. These develop so rarely before the age of fourteen that one should hesitate to make these diagnoses in children. It seems very desirable to be able to recognize the children who are predisposed to these disorders, but there are certain great and almost insuperable difficulties in doing this. Psychiatrists and mental hygienists have a fairly good idea as to the types of personality in which these disorders may develop, and so they are able to recognize the predisposition of some children to certain psychoses. However, those who have not had special training can not be taught to do so without some danger both of missing many conditions and of considering many children as pre-psychotic who are not.

Annually thirty to forty thousand new patients develop dementia praecox, and altogether nearly one-half of the beds devoted to mental diseases in this country are occupied by sufferers from this disorder. This makes dementia praecox a greater health problem than tuberculosis. In children one encounters pre-dementia praecox rather than fully developed cases. As in tuberculosis, early diagnosis seems very desirable, for it is in the early cases that most can be done.

The problems in child psychiatry, other than those of mental deficiency and epilepsy and the major psychoses which have been mentioned, are so numerous and diverse that it is difficult to classify them. A group of problems in emotionalism and in neuroticism in children, somewhat related to the problems of the psychoneuroses in adults, is encountered. There is a large and distinctive group of problems known as the primary behavior disorders and conduct disturbances that both the mental hygienists and the public health workers see. They should be familiar with them and prepared to manage them.

Relationships of Public Health and Mental Hygiene

The State has the main responsibility in the care of the mentally ill and the mentally deficient, and in a general mental hygiene program. This should be centralized in a State Department of Mental Hygiene with a Commissioner of Mental Hygiene, just as there is a State Department of Health with a Commissioner. These two State officers and these two State departments should work in collaboration. The State Department of Mental Hygiene and the State Commissioner should have oversight and direction of all the activities and endeavors along the lines of mental hygiene. The State should maintain medically and psychiatrically adequate State hospitals. Some special provisions somewhere in the State set-up should be made for child psychiatry. In modern psychiatry the psychopathic hospitals that concentrate on early and recoverable mental conditions rather than on custodial care play a great and important role. Since most psychiatric conditions in children are acute and recoverable, probably the special provisions for children should preferably be in the acute psychopathic rather than in the State hospitals. This would also tend to increase the very desirable segregation of children from adult and chronic patients.

In the local communities, counties, and municipalities, unless they are very large and wealthy, it does not seem feasible to have resident psychiatric and mental hygiene officers and workers such as the public health program has. Even separate divisions of mental hygiene in the local public health organization are not advised. Local needs can be fairly well supplied by traveling psychiatric and mental hygiene clinics under the direction of the State Commissioner of Mental Hygiene and the State hospital system. This is the system in effect in the most progressive and well-organized states. It still leaves the public health workers, officers and nurses and the private practitioners as the first line of resident defense in public mental hygiene and psychiatric practices, and makes it imperative for all the health workers to have some understanding of mental and nervous disorders and to be "mental hygiene minded", especially in regard to infants and children.

Local health officers and nurses who are alive to the needs of their community will find that the whole broad field of mental hygiene touches—in fact, invades their more specific activities and functions at every point. The local health workers should be familiar with mental diagnoses and with the care of mental diseases and deficiencies. They should know how to go about obtaining specialized help if this is necessary, and how to cooperate with visiting clinics, and they should know something about the mental hygiene facilities such as homes, specialized schools, hospitals, colonies, and institutions, both public and private charitable ones.

A modern State hospital system has provisions for some sort of parole or probate for discharged and convalescent patients. Sometimes the readjustment of the mental patient from the sheltered hospital conditions to the home situation, and the gradual assumption of the burdens of life may cause relapse. Through the psychiatric social workers the hospitals should give some intermittent help and guidance, but the local health workers should supplement this with more continuous local assistance.

Some states provide for visiting local mental hygiene clinics for children — or child guidance clinics, as they are called—in addition to those for adults. These child guidance clinics are excellent and are in line with the most advanced mental hygiene procedures; however, they consume a great deal of professional time and were it not for their value in research in child psychology, they are so expensive that they would have to be classed as medical and social luxuries. At present only large and wealthy communities or well-endowed organizations maintain these separate child guidance clinics. They cannot function effectively without the cooperation of other welfare and health agencies on whom they rely, not only in obtaining and arranging for their cases, but also in carrying out their recommendations.

The school system and the public health department should cooperate in a community in medical inspection in the schools, and some work in mental hygiene should be incorporated. The medical inspector of the school system should be prepared to aid in the recognition and the handling of children who are experiencing mental and emotional handicaps and difficulties. Health aid should even extend to the recognition of cases of mental deficiency and to the establishment of the special classes which have been found so beneficial for problem children.

Many times someone is needed to give a psychiatric opinion about a delinquent child. This happens especially when a juvenile court is functioning in a modern and progressive way and wants to take into consideration all the factors in its deliberation about a case. If there is no specialized help available, the public health officer should be prepared and willing to render these services. Similar help is also often needed in problems concerning the adoption of children

Wilson G. Smillie, a great authority on public health, in his book on PUBLIC HEALTH ADMINISTRATION emphasizes the importance of mental hygiene in the public health program in general and the importance of the public health nurse in the mental hygiene work in the local communities in particular. Quoting Smillie, "Public health workers, especially public health nurses, should be trained to understand people as well as disease, and to deal with common mental hygiene problems as a part of their daily activities in their contacts with the community."

In both public health and mental hygiene great reliance is placed on the education of the public and both endeavors have already reaped advantages from their educational work, notably public health. But mental hygiene has also succeeded in dispelling some of the ignorance and has changed some of the attitudes concerning mental and nervous diseases. In this educational work the programs of the health worker and the mental hygiene worker can reinforce each other.

There is little doubt that the teachings of mental hygiene have already been widely diffused to the advantage of human health, happiness and efficiency. Attitudes toward children, their rearing, their training, and their education have been revolutionized in the last generation. Psychiatry and mental hygiene have thrown a great deal of light on the sexual life of normal and abnormal persons. Unless the programs for sex hygiene and education utilize these findings and proceed along psycho-sexual lines, they will get nowhere. The child is not without sexual curiosity. A young child's questions as to sex should be met frankly and openly. No covered and morbid curiosity should be allowed to develop. No information beyond a young child's understanding or beyond a simple, honest answer to his questions should be given. No great or complicated amount of sexual instruction is usually needed in what is known as the latency period, from the age of five or six until around eleven (and any is best given to the individual child rather than to any group of children). After that the child should be gradually, calmly, prepared for the stress and strain of puberty and adolescence by appropriate instruction as to sex.

Just as there are voluntary associations such as the Red Cross, tuberculosis associations, etc., that are auxiliary to public health work, so are there organizations to promote mental hygiene, such as state and local mental hygiene societies, which play a definite and valuable part in the community mental hygiene program. Mental hygiene societies study the cause, prevalence and prevention of mental disorders, stimulate interest in them and help educate the public as to them and, in general, serve as a clearing house for information about them. If they at all warrant it, these mental hygiene societies should have the approval and the support of the public health workers.

Mention has been made of specific control of one group of mental diseases, those caused by syphilis of the nervous system. There seems to be another specific preventive for some mental disorders, but it is one that presents all sorts of difficulties, not the least of which is our inadequate knowledge of it. This is the application of eugenics. While this question is one in which both public health and mental hygiene are greatly interested, it differs from the practices of each in that it is directed more toward those unborn than toward those born; and it is such a complicated and controversial subject that it cannot be dealt with here. There is great need both for more scientific knowledge and for more education of the public before we are in a position to apply effectively the principles of eugenics.

It is possible that except in the case of hereditary and syphilitic and other infectious diseases, we shall never see specific causes and specific treatment and cures for many of the mental, nervous and emotional disorders, and any search or research for them is like chasing a will-of-the-wisp. In psychogenic or mentally determined mental diseases, we shall always have to depend on the difficult diffusion of mental hygiene teachings and principles and on the influence of individual practitioners and mental hygienists.

In spite of these difficulties and these differences, there should nevertheless be a better understanding and collaboration between the program of public health and that of mental hygiene.

THE NEWER KNOWLEDGE OF VITAMINS

VICTORIA CARLSSON

GREENSBORO

A deficiency disease, of whatever nature, causes distinctive functional disturbances which have their origin in morphologic changes in certain tissues. These are regarded as primary effects. Various nonspecific and secondary effects necessarily follow.

Vitamins A, D, and E are soluble in fats and are associated with lipoid extracts of natural products. Vitamins B, C, riboflavin, and the antipellagra factor or factors, and certain others are soluble in water. There is at least one fat soluble factor not listed above, and several water soluble factors known to be indispensible for the rat or the chick which are not, apparently, essential for man.

Vitamin A

Vitamin A does not occur in the plant world, but its precursors, carotene and cryptoxanthin are widely distributed. Carotene is one of the yellow pigments found in yellow and green plants and was so named because it was first isolated from carrots. It occurs in three forms, A, B, and Y-carotene. B-carotene has double the vitamin value of the other forms. The precursors carotene are also found in fish liver oils, milk, butter, eggs and liver in varying proportions.

Vitamin A values are essential to the growth of the young and to nutrition and health at all ages. When the intake is in excess of immediate need the body stores the surplus, so that a subsequent temporary deficiency of intake may show no effect.

Dr. McCollum states that the pathological condition of vitamin A deficiency, or A-avitaminosis, is the result of accumulation of keratinized epithelial cells in glands and their ducts, and in many organs. Wolbach(1) has discussed the subject in detail. In the lungs, cyst formation and bronchial occlusion, with consequent bronchiectasis and atelectasis, have been observed in men and animals. In organs cysts are formed which are filled with a yellow cheesy mass of des-

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From the Woman's College of the University of North Carolina. Read before the North Carolina Public Health Association, Greensboro, May 1, 1939.

1. Wolbach, Science, 86:569; J. A. M. A. 81:828, 1937.

quamated keratinized cells. Higgins(2) found that urinary calculi occurred in 50 per cent of animals deficient in vitamin A, and he points out that keratinization of the epithelium of the genito-urinary tract, urinary infection, and alkalinuria are due to ammonia formation. On administration of vitamin A, the epithelial cells return to their normal form and function, the infection clears up, and the urine becomes acid.

O'Conor(3) has pointed out the frequent occurrence of calcium carbonate calculi in patients on an alkaline diet in the treatment of ulcer, and states that the provision of abundant vitamin A is generally effective in preventing recurrence of these stones.

During the last few years several clinical investigations have been published on the skin lesions which, according to some observers, are the earliest evidences of vitamin A deficiency. Frazier and Hu(4) first pointed out that in this deficiency keratotic papules of varying size appear, distributed especially over the thighs, arms and shoulders, and arising from the pilosebaceous follicles. Microscopically, the ducts are distended, and the openings are plugged with desquamated cornified epithelium. This eruption is rare in children, but rather common in adults, and when fully developed probably represents late or severe deficiency. Dryness of the skin, according to these workers, preceded the eye changes by several weeks.

At the present particular interest centers upon vitamin A deficiency in relation to impairment of vision. It is believed that both in adults and in older children hemeralopia is one of the earliest manifestations of vitamin A deficiency. In general xerophthalmia and night blindness are present when the deficiency is of longer duration. Infection of the cornea is favored by the accumulation of keratinized cells and by lack of tears for washing the eye, and may lead to ulceration of the cornea. Night blindness is failure of vision in faint illumination. These patients respond well to administration of vitamin A.(5)

The exact daily requirement of vitamin A has not been determined. Just as different foodstuffs vary in the amount of the vitamin they contain, so individuals may vary in their ability to absorb, store, convert, and destroy carotene and vitamin A. A number of estimates of daily human requirements for this factor are available.

In the diets of nursery school children Rose, Robb, and Borgeson,(6) found the daily supply of vitamin A at school as follows:

	Measure	*Units of Vitamin A*
Milk	1 pt.	1,000
Cod Liver Oil	1 tsp.	2,000
Butter	1 tsp.	100
Egg Yolk	1 yolk	825
One Vegetable rich in Vitamin A	2 tbsp. carrots	1,000
		4,925

If the home diet includes another pint of milk, another teaspoon of butter and another vegetable rich in vitamin A daily, the diet of a nursery school child would contain 6,000 to 7,000 units of vitamin A per day. Stiebeling (1936) states that the daily requirement of adults is from 4200-5600 International Units. Growing children are allowed double the amount. The Committee of Nutrition of the League of Nations (1936) suggests a daily intake of 8700 International Units for pregnant and nursing women. Vitamin A taken in large amounts is not toxic.

Vitamin B

The principal effects of vitamin B or thiamin deficiency are degeneration of the nervous system, cardiac enlargement and dysfunction, edema, gastro-intestinal disturbances, muscular atrophy, and loss of appetite.

Some of the nervous symptoms of thiamin deficiency are numbness and tingling sensations, particularly affecting the fingers and usually associated with a gnawing pain which runs up the arm, especially at night.

Cowgill(7) pointed out that conditions such as amebic dysentery, commonly found in beri-beri localities, may constitute the precipitating cause of the deficiency disease. The inefficient utilization of thiamin due to loss in watery stools and to gastro-intestinal disturbances which interfere with the digestion and absorption of nutrients may be the cause. Strauss(8) has shown that this interference with absorption of thiamin is most frequently the cause of dietary deficiency diseases, particularly pernicious anemia and related macrocytic and idiopathic hypochromic anemias, pellagra and "alcoholic"

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2. Higgins, C. C., J. A. M. A. 104:1296, 1935.
3. O'Conor, V. J., J. A. M. A. 104:1298, 1935.
4. Frazier, B. N. and Hu, C. K., British M. J. 2:113, 1934.
5. Jeans, P. C. and Zentmire, Z., J. A. M. A. 106:996, 1936; ibid, 108:451, 1937.
6. Rose, M. S.: The Foundation of Nutrition, 1938.
7. Cowgill: The Vitamin B Requirement of Man, 1934.
8. Strauss, M. B., J. A. M. A. 103:1, 1934.

pregnancy, and other forms of polyneuritis in the temperate regions.

Minot(9) has reported cases of diabetes associated with peripheral neuritis and achylia gastrica which responded to yeast therapy, and has raised the question whether achylia gastrica may not interfere with the utilization of both the anti-beri-beri and anti-pellagra vitamins. Many cases are recorded of the appearance of B avitaminosis associated with voluntary restriction of the diet as a result of digestive disturbances, or for therapeutic measures, as in diabetes. Dr. Elsom(10) studied a patient who had voluntary restricted his diet, whose symptoms resembled those of pernicious anemia. There was marked pallor, glossitis, and signs of posteriolateral sclerosis. The typical signs of pernicious-anemia achlorhydria and anemia were lacking. There was edema and low blood protein. Administration of a liver preparation adequate to produce remission of pernicious anemia caused only slight improvement of the glossitis. On administration of a concentrate of "B-complex" there was rapid improvement in respect to fatigue, anorexia, dyspepsia, paresthesia, edema, glossitis, scaling of the forearms and brittleness of the nails. Improvement began in two weeks and was complete in six. The pitting edema disappeared, and there was a simultaneous rise in blood protein, although there was no increase in the protein content of the diet.

Loss of appetite is one of the first observable symptoms of thiamin inadequacy. Cowgill also noted loss of tone in the gastric musculature of thiamin-deficient dogs.

The more recent studies(11) have shown that thiamin deficiency is accompanied by a progressive diminution in carbohydrate tolerance. Peters' "theory"(12) is related specifically to pyruvate oxidase in its aerobic reaction. This specific action manifests itself in two ways: (a) by increasing oxygen intake and (b) by decreasing markedly the pyruvate formed by thiamin deficient brain tissue.

McCollum states that at least four important factors may operate in determining the amount of thiamin that should be in the diet in order to satisfy the body's need. They are: (1) the absorptive ability of the gastro-intestinal tract, (2) the degree of thyroid activity, (3) the amount and quality of the fat in the diet, and (4) the amount of riboflavin in the diet. The first has already been discussed; the second is briefly reviewed by Carpenter and Shrapless(13), whose studies suggest that some factor present in yeast, which is lost when the yeast is anto-claved and which is not supplied by a vitamin B-containing extract, causes an increase in the iodine content and concentration of the thyroid. Sure and Buchanan(14), have published results which show that in experimental hyperthyroidism protection can be afforded by ingestion of large amounts of pure thiamin.

The following are opinions (inadequately substantiated by facts) regarding thiamin needs. The Council on Pharmacy and Chemistry of the A. M. A. ('36) gives as the minimum requirement for infants 50 International Units, and for adults 200 International Units per day. Daniel and Munsell, ('37) give for adults 200-300 International Units per day; Rose, ('38) 400-500 International Units per day.

The successful therapeutic use of thiamin(15) has been reported in: Neuritis associated with pregnancy; heavy metal neuritis, such as lead, and arsenical neuritis occurring during intensive treatment for syphilis; trigeminal neuritis; certain so-called diabetic conditions; certain gastro-intestinal disorders; and lack of appetite.

Vitamin G

There is unanimity among investigators that pellagra is due to some dietary deficiency which has been called B_2, P-P factor, and vitamin G. For some years it was generally believed that a form of dermatitis in the rat caused by inadequate diet was analogous to human pellagra. This is now known to be a mistaken view. Maize, which has generally been abundant in the diet of the human pellagrin, prevents or cures the rat dermatitis. The factor necessary for the prevention of the rat dermatosis is now called vitamin B_6. The administration of liver, yeast, milk, lean meat, or wheat germ is curative in the human pellagra victims.

Recent developments have indicated that nicotinic acid may prove to be a valuable therapeutic agent in the treatment of pellagra. Elvehjem, Madden, Strong and Wol-

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9. Minot, C. R., Ann. Int. Med. 3:216, 1929.
10. Elsom, K. O., Pennsylvania M. J. 37:87, 1933.
11. Stochr, Vitamin Forsch, 6:209, 1937.
12. Peters, Biochem. J. 30:2296, 1936.
13. Carpenter and Shrapless, J. Nutrition, 13:235, 1937.
14. Sure and Buchanan, Proc. Soc. Exper. Biol. and Med. 33:775; J. Nutrition 12:513, 1937.
15. Vorhaus, Am. J. Digest. Dis. and Nutrition, 3:915, 1937.

ley(16), have reported that nicotinic acid and nicotinic acid amide will cure black-tongue in dogs. Sebrell, Onstott, Fraser and Daft(17) have confirmed Elvehjem's results and find that 6 mg. of nicotinic acid twice a week will prevent black tongue in a dog on a black-tongue producing diet during an experimental period of six months.

A great number of research workers have administered nicotinic acid to pellagra cases. They noted rapid improvement in the mucous membrane lesions and in the erythematous skin lesions. They feel that nicotinic acid is either a pellagra-preventive vitamin or a provitamin, or that it is one of two or more substances necessary for the prevention of all the symptoms described as pellagra, or that it may be conjugated in the body into a more complex essential material.

Sebrell writes: "Diets on which pellagra develop are also deficient in other respects. Attempts to prevent the disease by the wide spread use of nicotinic acid might allow symptoms of vitamin B_1 deficiency, protein deficiency, riboflavin deficiency or mineral deficiency to replace pellagra as a nutritional problem in this country."

Therefore, although it may be desirable at some future time to attempt to prevent pellagra by the use of nicotinic acid mixed with some commonly used article of the Southern diet, the safest procedure at present is to continue vigorously our efforts to prevent disease by improving the diet, using nicotinic acid as individual circumstances indicate, and leaving the possibility of its uncontrolled administration until additional information is available.

Vitamin C

In humans a deficiency of ascorbic acid scarcely ever occurs unaccompanied by other dietary imbalance. This produces variability in the symptoms referable to scurvy, but in general the following are characteristic(18): The adult loses weight, is anemic, weak, and short of breath. The gums become swollen, bleed easily and frequently ulcerate. The teeth loosen and may drop out. Necrotic areas in the jaw bones may occur. Hemorrhages in the mucous membranes and skin are characteristic. Blue-black spots develop in the skin after trivial injury, or they may occur spontaneously. The ankles become edematous, and in some cases there develops a hard, board-like condition of the skin and subcutaneous tissues. Nervous symptoms of various types may appear. Children and infants are fretful, anemic, and without appetite. They fail to grow satisfactorily, and exhibit vague evidences of illness.

Wolbach(19) states that "The characteristic hemorrhages of scurvy are attributable to the inability of the body to produce intercellular material. The latter is necessary to the walls of the blood capillaries. It is the cementing substance which holds these cells together. This intercellular material constitutes the foundation of all fibrous structures, the matrices of bone, dentine, cartilage, and all non-epithelial cement substances, including that of vascular endothelium."

The ability of human tissue to retain ascorbic acid depends in some measure on factors other than the amount of this substance already in the body. Hawley(20) and associates found that normal persons saturated with ascorbic acid excreted almost 100 per cent of daily test doses of pure vitamin C, when ammonium chloride was administered with it. However, the same dosage of vitamin, accompanied by sodium carbonate, was followed by an excretion of only approximately 50 per cent of ascorbic acid in the urine.

Better retention of ascorbic acid was obtained when cabbage was fed to guinea pigs.

Acetylsalicylic acid also caused increased excretion of ascorbic acid(21 22).

Chemical methods for assaying foods for ascorbic acid(23) have been made fairly reliable in recent years. The use of tests to estimate requirements for the vitamin, other than for the prevention of scurvy, are not sufficiently refined for universal acceptance.

An average man would require 40-60 units of vitamin C per day, or one-half cup of orange juice. A child needs about 80 Sherman units per day for safety(6).

Vitamin D

Studies of recent years have shown beyond a doubt that there are several chemically distinct forms of vitamin D. Of the several forms which have been recognized to date,

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16. Elvehjem, Madden, Strong, and Wolley, J. Biol. Chem. 123:137, 1938.
17. Sebrell, W. H., J. A. M. A. 110:1665, 1938.
18. Dalldorf, G., J. A. M. A. 111:1376, 1938.
19. Wolbach, J. A. M. A. 108:7, 1937.
20. Hawley, J., Nutrition, 12:215, 1936.
21. Daniels and Everson, Proc. Soc. Exper. Biol. and Med. 35:20, 1936.
22. Bowman and Muntwyler, Proc. Soc. Exper. Biol. and Med. 35:537, 1937.
23. McCollum, E. V.: The Newer Knowledge of Nutrition, 1939.

two are known to be of prime importance in medicine. These are activated 7-dehydrocholesterol and activated ergosterol. Ergosterol is a sterol which occurs in relative abundance in fungi such as ergot or yeast. Activated by exposure to ultra-violet rays and dissolved in oil it is called viosterol. The Germans call it vitamin D_2. Activated 7-dehydro-cholesterol is cholesterol, the chief sterol of animal fats. Its active form thus comprises the vitamin D which is produced in the skin, fur or feathers of animals exposed to sunlight or other sources of ultraviolet rays.

Individual variation in ability to utilize calcium and phosphorus of the diet without added vitamin D exists at all age periods. Some infants have poor calcium retention, and only a very few retain an ample amount without vitamin D. As the age increases more persons are able to retain adequate amounts of these minerals without vitamin D, but at all age periods some persons are found who are not able to do so. Cod liver oil, U. S. P. Grade, contains 85 International Units of vitamin D and 600 units of vitamin A per gram. Halibut oil contains 75-125 times as much vitamin D as cod liver oil; tuna fish liver oil contains 40,000 International Units per gram.

The vitamin D requirement of a full term artificially fed baby is probably between 300 to 400 units a day. Normal babies receiving human milk require less vitamin D than babies receiving cow's milk. For children between infancy and adolescence a daily allowance of at least 750 cc. of milk with 300-400 units of vitamin D permits retention of calcium and phosphorus.

For adolescents a need for vitamin D exists, but insufficient data are available to permit an estimate of the quantity required. 300-400 units a day would be satisfactory(24). For adults the optimum amount of vitamin D, if a need exists, remains to be determined. During pregnancy and lactation the requirement is greater than in any other period of life. A daily dosage of 800 units or more is suggested.

The only method available to determine the vitamin D content of an oil is based upon observing the size of the dose necessary for the deposition of calcium salts in the bones of growing rachitic animals(23). It has been found that if a sample of cod liver oil and one of viosterol are assayed with young rats and then with rachitic chicks, about 100 times as many rat units of the vitamin of cod liver oil is necessary to produce comparable calcification in chick. This remarkable difference in the reaction of the rat and the bird affords a means of differentiating certain of the different forms of vitamin D. Rat unit for rat unit, the vitamin of tuna fish is only about one-seventh as potent for the chick as for the rat. Several careful investigations with human infants have demonstrated that the latter reacts almost equally well to the vitamin in cod liver and the viosterol.

May Mellenby first demonstrated the importance of an adequate supply of vitamin D for the development of teeth with normal structure of enamel and dentine. She also showed by extensive studies on institutional children that the regular provision of vitamin D reduces the susceptibility of teeth to decay. Several investigators have confirmed her findings. Since the normal behavior of cartilage and normal content of phosphate in the body fluids are essential for the calcification of enamel and dentine, and both depend upon an adequate supply of vitamin D, the soundness of this view is apparent. The presence of pits and fissures in teeth, forming potential food traps, predisposes teeth to caries. Since the ameoblasts are of epithelial origin, the significance of vitamin A, so necessary to prevent keratinization of this type of cell, is also apparent for the formation of normal enamel.

Richardson's study(25) on the effect of viosterol during pregnancy and upon the duration of labor in primiparae is of great interest. Of the 300 cases studied, 201 were given viosterol during pregnancy. The length of time of labor was reduced to almost one-half, and the loss of blood was less in women treated with viosterol.

Wilder and Howell(26) point out that the majority of cases of parathyroid enlargement occur in the northern part of the United States. Several investigators have described the extraordinary enlargement of parathyroids in chickens deprived of vitamin D. This condition is rare in the south, whereas it occurs frequently in the north.

24. Jeans, P. C., J. A. M. A. 111:703, 1938.

25. Richardson, G. C., Illinois Med. J. 65:367, 1934.

26. Wilder and Howell, J. A. M. A. 106:427, 1936.

VITAMIN CHART

Vitamin	Chief Functions	Results of Deficiency or Absence	Storage	Stability	Good Sources	Human Requirement
VITAMIN A $C_{20}H_{30}OH$ Exists as carotene and cryptoxanthin in plants and animals. These pro-vitamins are converted into vitamin A in the body.	Essential for: Normal growth Normal function of eyes Normal function of epithelial tissues.	Drying and deterioration (keratinization) of sebaceous glands—skin dry, rough at hair follicles; a pimply eruption on back, chest, shoulders, thighs; acne on face. Tear glands cease to function, lids congested, cornea affected (xerophthalmia); sight less distinct in daylight (hemeralopia); night blindness. Mucous membranes deprived of normal secretion offer harbor for bacteria—cheesy deposits. Cyst formations and abscesses. Dentine and enamel of teeth become defective. Bones fragile; minute ridges at rib junction. Retarded growth and weakness. Interference with reproduction and lactation.	Surplus stored in liver, lungs and kidneys.	Not affected by heat alone. Gradual loss through long continued heating in contact with air.	Fish liver oils Liver Butter Cream Whole milk American cheese Escarole Chard Spinach Kale Dandelion greens Carrots Broccoli Asparagus String beans Yellow peaches Tomatoes	Exact daily requirement not known of any vitamin. Stiebeling ('36): Child, 8400 International Units. This may be supplied by: Milk, 1 qt. Cod liver oil, 2 tsp. Butter, 2 tsp. One egg 2 vegetables rich in vitamin A. Pregnant and nursing women, 8700 I. U. Adults 4000-5000 I. U.
VITAMIN B_1 $C_{12}H_{18}N_4SOCl_2$ Thiamin	Essential for growth; prevents neuritis. Promotes appetite and normal motility of the digestive tract. Important in carbohydrate metabolism, reproduction and lactation.	Beriberi. Degeneration of the nervous system. Cardiac enlargement and dysfunction. Edema. Gastro-intestinal disturbances. Muscular atrophy. Lack of appetite. Diminution of carbohydrate tolerance. Degenerative changes in testes and ovaries.	Not stored in the body.	Not destroyed at ordinary cooking temperatures.	Yeast, Liver, Wheat embryo, Milk, Peas, Soy beans, Spinach, Lettuce, Broccoli, Parsnips, Tomatoes, Plums, Oranges	Munsell ('39): 300-600 International Units. This may be supplied by: Milk, 1 qt. Whole grain cereals. Orange or tomato juice.
RIBOFLAVIN $C_{17}H_{20}N_4O_6$	Essential for growth.	Stunted growth; lowering of general tone; premature aging. Development of cataracts in rats and chickens. In dogs—weakness, lack of muscular coordination; livers hard, yellow and friable; bradycardia. Cheilosis (lesion on lips).	Stored in the liver, kidney, lungs and heart.	Stable to heat.	Yeast, Milk, Liver, Egg, Leafy vegetables, Veal, Pancreas, Beef muscle	Stiebeling ('36): Child, 450-540 Sherman-Bourquin Units. This may be supplied by: Milk, 1 qt. 1 egg, leafy vegetables.
VITAMIN G, or Goldberger's P-P factor, or Nicotinic acid $C_6H_5NO_2$	Necessary for the prevention of human pellagra and black-tongue in dog.	Pellagra-like symptoms Dermatitis Sore tongue, mouth and lips Gastro-intestinal disturbances Disorders of the nervous system.	Stored in the body.	Stable to heat.	Yeast, Milk, Liver and Extracts, Lean meats, Salmon, Tomatoes, Peanut meal	Not determined
VITAMIN C Ascorbic acid or Cevitamic acid $C_6H_8O_6$	Prevents scurvy. Essential to cellular respiration and to formation and regulation of intercellular material.	Inability of tissue to produce intercellular material. Profound changes in structure of teeth and gums. Changes in growing ends of bones with beading and other deformities. Falling apart of bones due to loss of supporting cartilage. Enlargement of heart and damage to heart muscle. Degeneration of muscle fibers; extreme weakness. Anemia due to destruction of blood forming cells in the bone marrow and loss of blood. Degeneration of bone matrix with loss of calcium.	Not stored in the body.	Heating, drying and aging are factors in destroying it. Addition of alkalis increases destruction.	Citrus fruits Tomatoes Cabbage Onions Strawberries Cauliflower Banana Pineapple Potatoes	Munsell ('39): 800-1200 International Units (40-60 mg.) (About four ounces orange juice per day or eight ounces tomato juice.) Pregnancy, twice the above needs. No injury from larger amounts.
VITAMIN D Two forms are important: Plant form—Activated ergosterol=Viosterol Animal form—Activated 7-dehydro-cholesterol	Prevention and cure of rickets. Normal calcification in developing bone. Formation of normal teeth. Protection against dental caries. Required by pregnant mother to prevent rickets in the young.	Defect in calcification of growing bones. Soft and fragile bones. Enlargement of rib junctions "rachitic rosary". Enlargement of ends of long bones. Bulging forehead. Softening of cranial bones. Delayed closing of fontaneles. Malformation of chest and pelvis. Bowed legs. Defects in teeth (caries, poorly calcified teeth). General muscular weakness and instability of the nervous system.	Stored in the body.	Very stable.	Viosterol Cod liver oil Halibut oil Salmon Sardines Tuna fish Irradiated food Small amounts in milk and eggs	League of Nations ('30): Pregnant women, 840 International Units daily. Infants, 3 weeks, ½ tsp. cod liver oil or 400 I. U. per day; 2 months, 800 I. U. per day.
VITAMIN K Anti-hemorrhagic factor	Increases prothrombin in the blood and controls hemorrhage.	Deficiency of prothrombin in plasma.	?	Fairly stable to heat.	Leafy vegetables Hog liver fat Hemp seed Soy bean oil Cereals Alfalfa	Not known.

Victoria Carlsson, W. C. of U. N. C.
Public Health Association, May 1, 1939.

Vitamin K

In 1935 Dam of Copenhagen observed that newly hatched chicks maintained on a diet which was deficient in certain fat soluble material, but otherwise adequate, suffered fatal hemorrhages into subcutaneous tissues. This condition was controlled by administration of nonsaponifiable, nonsterol fraction of hog liver fat, or by feeding alfalfa(27).

Vitamin K occurs in alfalfa, kale, spinach, dried carrot tops, chestnut leaves, tomatoes and oat sprouts, soy bean oil and vegetable oils, but is not found in significant amounts in fish liver oils.

Very little is known of its physical and chemical properties except that it is heat stable, fat soluble and readily destroyed by alkalis.

It is used clinically in certain diseases where there is a deficiency of prothrombine in plasma. This deficiency may be due to failure of absorption of this vitamin when bile is excluded from the intestinal tract, or when secretion of bile salts is reduced. In pre-operative cases it may be given in some concentrated form to raise the prothrombine of the plasma.

In the past year the sale of vitamins increased five-fold. Although most vitamins are too expensive at present to be added economically to the diet, science has laid a foundation for opening this field in a big business scale. Not only vitamins but minerals like iron, calcium and iodine can be added to this business.

Adding excessive amounts of certain vitamins or minerals to the diet may be dangerous, because other latent deficiencies of perhaps unknown kinds may result. Today we regard an adequate diet as composed qualitatively of many chemically discrete components provided in such state of combination that they are utilized efficiently. An adequate diet can be encouraged by stressing the need for protective foods, such as milk, meat, eggs, vegetables and fruits in the diet.

27. Snell, A. M., J. A. M. A. 112:1457, 1939.

Electrocardiograms.—The real reason for taking an electrocardiogram on every patient with a cardiac arrhythmia is so that after one has studied the records of a large series of cases, he may understand the clinical manifestations of cardiac irregularities so well that he is able to recognize the type of arrhythmia without the electrocardiogram.—Francis W. Peabody: Doctor and Patient, New York, The Macmillan Co., 1939.

DIABETIC COMA

Paul F. Whitaker, M.D.
and
Kilby P. Turrentine, M.D.

Kinston

Diabetic coma is probably the most spectacular emergency that we are called on to deal with in medical practice. Only those practitioners who have directed the treatment of diabetic coma to a successful conclusion can realize the real satisfaction that this gives. Our experience in the management of diabetic coma consists of sixteen cases which have occurred in our practice in the last fifteen years. Most of these cases were referred to us by other physicians and were managed on our medical service at Memorial General Hospital in Kinston. Out of the sixteen cases treated three deaths occurred. We feel now that two of these were inadequately treated, and in the light of our present experience we feel that they could probably have been saved by larger doses of insulin.

Pathologic Physiology

The pancreatic hormone insulin is necessary for the utilization of all foods, protein and fat as well as carbohydrate. In the absence of insulin all starch and sugar ingested appears in the urine as glucose. Moreover, from 45 to 58 per cent of the protein content of food and also the body protein which is utilized to maintain life during periods of starvation consists of glucose or compounds similar to glucose. In the absence of insulin this glucose derived from protein also occurs in the urine. Lastly, when glucose is not utilized by the body, the oxidation of both ingested fat and body fat is not complete, and instead of being converted into carbon dioxide and water, the oxidative process is halted before this point is reached and the fat yields various toxic acid substances such as beta-hydroxybutyric acid, aceto-acetic acid, and acetone. These are known collectively as ketone or acetone bodies. Ketone bodies are probably formed in the liver and are then excreted in the urine. Before being excreted in the urine they are neutralized by the alkalis in the tissues and the blood, consisting of sodium bicarbonate and various

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salts of potassium, calcium and magnesium.

Small amounts of ketone bodies are easily tolerated, but the formation of large amounts, such as occurs in severe diabetic acidosis, results in the continuous excretion of sodium salts and other base in the urine. A very small fraction of the acid substance may be neutralized by ammonia and excreted in the urine in the form of ammonium salts; but it is chiefly the sodium and other bases that are involved. At first only the body tissues are affected by this loss of base, and the blood chemistry remains unchanged. Finally, however, after the supply of base in the tissue is exhausted, the sodium content of the blood is drawn on to maintain neutrality. In addition, both the neutralized ketone bodies and sugar must be in solution before the kidneys can excrete them, and as a result there is a tremendous loss of water in their excretion. Associated with the loss of water there is a loss of chlorides. The reason for this is not understood. After all compensating mechanisms fail, the alkalinity of the blood is decreased and eventually the blood becomes slightly acid in reaction. It is not entirely understood, nor for practical purposes is it necessary to understand, how changes in the blood produce the characteristic symptoms of diabetic acidosis and coma.

The extent of these chemical changes can be determined to a considerable degree by analyzing the blood for its carbon dioxide combining power. This is obvious for the reason that if the sodium of the blood has been lost through the urine in the form of sodium salts or has been held in combination with strongly acid ketone bodies, it is unable to combine with carbon dioxide and its carbon dioxide combining power is reduced.

This test is important because a sharp reduction in the carbon dioxide combining power of the blood is tolerated poorly, and is practically always a sign of impending trouble. In the diagnosis and treatment of coma it is more important than blood sugar determinations, which are usually over-emphasized. It is true that if acidosis occurs in diabetes the blood sugar is almost invariably increased, but on the other hand the level of the blood sugar is not always indicative of the severity of the acidosis. For example, a patient in profound coma may not have an unusually high blood sugar; and on the other hand a patient may have a very high blood sugar without coma or even acidosis.

Etiology

Diabetic acidosis and coma are preventable, and when they do occur are usually the result of either ignorance or neglect. Their complications occur in severe diabetic patients as a natural consequence of the disease when treatment is inadequate, or as the result of some other disease, accident, or strain imposed on the patient with diabetes. In mild diabetics they practically never occur save in the presence of some associated disease or complication.

Acute infection—particularly acute colds—extraction of teeth, fractures of bones, prolonged physical or mental strain, and hyperthyroidism are frequent factors that bring on acidosis. Breaking the diet, insufficient amounts of insulin, or omission of insulin are also common causes. Often an otherwise well instructed diabetic will omit his insulin when his appetite fails from some acute infection or other cause, for fear of an insulin reaction. He does not realize that as soon as ingestion of food ceases he begins to catabolyze his own tissues. This food cannot be utilized in the absence of glucose and, consisting largely of fat, it yields large amounts of ketone bodies. In addition, in the presence of infection and other complications, the efficiency of insulin is decreased. The patient is, therefore, omitting insulin at a time when he needs it most, and severe acidosis with subsequent coma may develop within a few hours.

Prevention

At this point, before discussing the diagnosis and treatment of coma, it might be well to outline briefly measures that will prevent it. These measures have been outlined and used by Dr. Woodyatt of Chicago for more than eighteen years, and are tried and proven. They have been used in the practice of the writer for more than twelve years. Knowledge by the patient that he is a candidate for acidosis and coma in the presence of a cold, accident, or any acute infection is essential for him to carry out the preventive steps, and it is the duty of the physician to instil this knowledge into his patient.

When a cold, for example, has developed, the patient should promptly divide the day into six-hour periods. At 6 a. m., 12 noon, 6 p. m. and 12 midnight, he should empty the bladder, test the urine for sugar and ketone bodies, give a dose of insulin and a standard feeding. A standard feeding consists of 400 cc. (2 glasses) of milk, or 300 cc. of orange juice.

The first insulin dose should consist of one quarter of the patient's regular dose for twenty-four hours, plus 5 units. The second dose should have 5 more units than the first if acid is still present. The following doses should be increased by 5 units each dose until diacetic acid is absent, and later on the dosage from period to period should be adjusted as required to control glycosuria and insulin reaction. If the patient is on protamine insulin, the protamine insulin dosage should be continued, and the emergency program superimposed on it.

If early clinical symptoms of actual acidosis are present the program is the same except that feedings are omitted until the symptoms have disappeared. In addition the first dose of insulin should be large enough to cause disappearance of the symptoms in the first six hours. The dose should be ½ to 1 unit per kilo body weight, or even more. It is better to give too much than to give too little and risk coma, which is much more dangerous than an insulin reaction. When symptoms have ceased insulin reactions can be prevented by frequent hourly feedings of 50 to 100 grams of orange juice. As long as sugar appears in the urine there is no danger of hypoglycemic reaction, but it is well to have the patient empty his bladder each time the urine is examined, since residual urine may be misleading.

As soon as the symptoms of acid intoxication have subsided the case becomes one of ketosis without clinical symptoms, and the procedure of six hour examinations and insulin doses as needed should be resumed.

Symptoms and Diagnosis of Diabetic Coma

The initial symptoms of coma are vague and deceptive. It is, therefore, well to suspect acidosis in any case of diabetes whenever any unusual sign or symptom develops. Weakness, headache, thirst, loss of appetite, vomiting, lassitude, drowsiness, and pain in the back, legs, and abdomen are among the common early symptoms. Later dehydration, deep breathing, somnolence, and coma develop. Eventually the breathing becomes shallow and irregular.

The diagnosis of diabetic acidosis an coma should be suspected at the bedside an should be verified by finding in the urine a large amount of sugar and a strongly positive ferric chloride test for diacetic acid. The blood sugar is increased and the carbon dioxide combining power is reduced. As has already been stated, elevation of the blood sugar may not parallel the clinical condition of the patient, but usually the carbon dioxide combining power shows some parallelism to the patient's condition. Definite symptoms do not appear until the carbon dioxide combining power has dropped below 40 volumes per cent and may not appear until it has decreased below 30 volumes per cent. Below 20 volumes per cent the symptoms are usually marked.

Albumin and casts in the urine and elevation of blood urea are usually present in diabetic acidosis and should not be misleading. Leukocytosis often occurs.

Treatment

The treatment of diabetic coma calls for the prompt administration of insulin and fluids to restore the water balance of the dehydrated patient. It should be emphasized that there are no hard and fast rules for its treatment, and that each case should be considered as an individual problem. Nevertheless, it is well to have in mind some standard line of procedure to follow in the management of these cases, and to modify it as necessary for each individual case. It is highly desirable to have these patients in a hospital for treatment in order that proper laboratory observations can be made frequently. Promptness is important, and if the patient is seen at home insulin should be promptly administered before moving him. The earlier the treatment is started, the better the prognosis; and the longer it is delayed, the more grave the prognosis.

Diabetic coma and shock have many points of similarity, and the adjuncts to treatment in both are much the same. The bed should be warmed before receiving the patient, and the patient should be kept warm by hot water bottles. Unless the patient is moribund, gastric lavage should be done with a warm solution. Five per cent solution sodium bicarbonate is satisfactory, and after removing the gastric contents 250 to 500 cc. of the solution may be left in the stomach. Following this a cleansing enema is given routinely.

The dosage of insulin is that amount which will accomplish the purpose for which it is given. and it will vary according to the age of the patient, the severity and duration of the acidosis, the previous dosage of insulin and, to some extent, according to the usual dosage of insulin. For example, a patient taking 40 units of insulin a day will obviously need a larger dose than a patient who has never taken insulin. Generally speaking we give large doses at frequent intervals—from 50 to 100 units, usually the latter, every thirty minutes to an hour until improvement is noted. We prefer to risk overdose and a resulting insulin shock than underdose and death by coma. As soon as the patient is able to retain fluid by mouth, orange juice, ginger ale, sweetened coffee and tea should be given frequently to counteract the insulin. If it is felt that the insulin is not being absorbed, it may be given intravenously instead of subcutaneously.

Treatment is greatly facilitated by the frequent determination of blood chemistry, but can be carried out with hourly urinalyses as the only guide to treatment. Twenty or 30 units can be given when the urine turns red with Benedict's Solution, 15 units when orange and 5 or 10 units when green.

Patients in diabetic coma are almost invariably dehydrated, and quick restoration of body fluids is necessary. We usually give an initial intravenous administration of 1000 to 3000 cc. of normal saline and continue it by hypodermoclysis. The total amount per day may be as high as 7000 cc.

It is common practice to give glucose intravenously at the beginning of coma. We do not see the necessity for this, because the patient is already pouring out enormous amounts of glucose in the urine, and furthermore, its administration interferes with the evaluation of the treatment. We believe this practical consideration carries more weight than any theoretical benefit that might ensue from increasing the amount of utilizable carbohydrate.

The blood sugar may often drop before the carbon dioxide combining power rises. If the lag in recovery of the carbon dioxide combining power is too great, then 250 to 500 cc. of 3 per cent sodium bicarbonate solution can be given intravenously. Ultimately the carbon dioxide combining power returns to normal as a result of liberated bases previously combined with ketone bodies. Joslin does not recommend the use of alkalis. Large amounts are definitely contraindicated for reason of the fact that they will cause alkalosis, but the judicious use of small amounts is, in our opinion, indicated at times.

Circulatory failure is indicated by falling blood pressure and at times by anuria. The cause of death may possibly be due to the toxic action of ketone bodies on the myocardium, but it seems more reasonable to assume that death occurs, as in shock, from insufficient volume of circulatory fluid. This is best corrected by fluids rather than cardiac stimulants.

In conclusion it may be said that the prognosis depends on many factors—the age of the patient, complications, and the length, degree and duration of coma. Coma is preventable and should be prevented. When it does develop, if it is detected early, the life of the patient can usually be saved.

PROPHYLACTIC MEASURES OF PROVEN VALUE IN SOME OF THE INFECTIOUS DISEASES

J. Buren Sidbury, M.D.

Wilmington

The progress that has been made in preventive medicine in the past twenty-five years has been phenomenal. The span of life has been lengthened by ten to fifteen years, and the control of infectious diseases has been gratifying to the medical profession and comforting to the laity. Many heartaches and sorrows have been spared to millions of our population by the prevention of disease and death.

Briefly I wish to call your attention to those measures which are at our command, with a desire to encourage their more general use.

Small Pox

There was a time in the memory of many of us when small pox was a menace to our population. It was Jenner who gave to us the simple procedure of small pox vaccination, which has so nearly eliminated this disease that our Health Department does not now class it as one of the quarantinable diseases. We know that small pox can be

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eliminated entirely by vaccination. By some it is felt that vaccination between six and twelve months is less dangerous and more desirable than at six years.

Typhoid Fever

During the War between the States typhoid fever killed more men than died on the battle field. This was true of all wars until the World War, when all soldiers were given typhoid vaccination before going in the trenches. As a result of this, typhoid and paratyphoid fever were a negligible factor in the World War. Having had this practical demonstration of the effectiveness of typhoid vaccination, we should have as many as possible of our population vaccinated every three years for four or five series, and thereafter when there is any definite exposure. Too often we wait for an epidemic before urging typhoid vaccination. Each year not later than April or May the local health officer and the State Board of Health should bring this to the attention of the public by means of the radio and press. Our people expect us to keep them informed along these lines.

Scarlet Fever

The prophylactic measures used in scarlet fever have not been as successful nor as widely used as some of the other remedies we will discuss. One of those used is scarlet fever toxin which is given in five graduated doses. The number of doses has been one deterring factor, and many hold that all that is accomplished by these injections is the prevention of the rash in scarlet fever, which creates a distinct obstacle in the diagnosis of the disease. The duration of this immunity is short, probably one year.

Most of us found that the administration of scarlet fever antitoxin was accompanied by many cases of serum sickness. Often the prophylactically treated case was sicker than the patient with scarlet fever.

As a result of the relatively short duration of immunity and the frequent occurrence of serum sickness this prophylactic procedure has not been extensively used. Too, the susceptibility to scarlet fever is much less than to measles and whooping cough—probably less than 15 per cent of the population being susceptible to scarlet fever. However I do advise a Dick test on all student nurses and interns, especially those who have to wo in hospitals for contagious disease.

Diphtheria

For about twenty-five years now the medical profession, led by the late Dr. W. H. Park, has been at work on the prophylactic treatment of diphtheria. Probably more intensive educational campaigns have been waged in New York City than in any other place in this country. When we see that the deaths last year from diphtheria in New York City, with a population of over seven million, were only 27, while our state with half that population had 188 deaths, we are convinced that diphtheria is a problem that requires our earnest support.

Thanks to our able senator, Dr. T. W. M. Long, we now have a law which requires immunization against diphtheria of all children between the ages of six months and six years. A certificate must now be presented as a requisite to entering the public schools of North Carolina.

At first toxin-anti-toxin was used in three to five doses one week apart. Later toxoid in two or three doses, and still later alum precipitated toxoid in one dose and then two doses six to eight weeks apart, were advocated. It is felt that one dose of alum precipitated toxoid will immunize 85 per cent of the cases and two doses will immunize 95 per cent. For this reason two doses are given. It is advisable to have Shick tests done each year for five or six years to detect the small per cent who lose their immunity.

If the contacts can be seen daily and cultures obtained, it is not advisable to give antitoxin prophylactically. If such is not possible, I feel that we should play safe and give 1000 to 1500 units of diphtheria antitoxin to members of a family which has a definite clinical case.

Tetanus

The question when to give tetanus antitoxin in abrasions and puncture wounds is ever being asked the medical man as well as the surgeon. No one knows definitely how to answer this question, but in doubtful cases we have to play safe and give the antitoxin. We know, or believe, that much tetanus antitoxin is given unnecessarily, but we do not know how, safely, to avoid this. Recently, however, it has been found that tetanus toxoid can help solve this difficult problem.

I two doses of [illegible] each of tetanus toxoid are given at [illegible] hree month intervals, the tetan[illegible] concentration in the blood [illegible] a point not quite suffi-[illegible] from the disease; but [illegible] 1 cc. of tetanus toxoid is given the tetanus antitoxin in the blood will immediately increase and rise to a higher level than when 1500 units of tetanus antitoxin is given and this level is sustained in the blood stream longer than when tetanus antitoxin is given.

A routine which is practical would be to give 1 cc. of tetanus toxoid at the same time that diphtheria toxoid is given. Give 2 doses at two month intervals. Later, if the child gets an injury, a third dose of tetanus toxoid may be given instead of tetanus antitoxin. The dangers of horse serum reactions are thereby eliminated.

A measure which I have routinely adopted is to give all patients with eczema, hayfever and asthma two injections of tetanus toxoid at two or three month intervals. If they get a rusty nail puncture later, they are given the third dose of tetanus toxoid, 1 cc., and no antitoxin is given.

Whooping Cough

I know that all of you who have done much general practice have given whooping cough vaccine. I have probably given a barrel of the vaccine originally put out by our State Board of Health. I do not believe it benefited 10 per cent, if any of the cases. It was often given for the lack of something better to do, when doing nothing would have been better practice.

Sauer's whooping cough vaccine is of definite value as a prophylactic remedy, but not as a therapeutic remedy. Dr. Sauer advises that it should be given three to four months before exposure if beneficial results are to be expected.

In the past four years I have given 290 infants and children Sauer's whooping cough vaccine as a routine prophylactic measure. Of this number seven cases developed pertussis either while being treated or within two weeks after treatment was finished. Two children developed light cases three years later.

In one family of four children, ages four, three, two years, and five weeks, the oldest child was treated at ten months with Sauer's whooping cough vaccine. One month ago the three and two year old sisters developed very definite cases of whooping cough with all the typical signs, cough and whooping, and vomiting. The older child escaped. The five weeks old infant was given hyperimmune serum after being exposed to his sisters for ten days. Three doses of 10 cc. each were given three days apart. He was beginning to cough when the serum was started. At the end of one week he had stopped coughing and escaped completely.

Another four weeks old baby was exposed in his own home to his sister and aunt who had whooping cough. He had been coughing for one week when serum was given, and two doses of 10 cc. of hyperimmune serum at three day intervals satisfactorily aborted his case.

A third patient, who had had severe pertussis for three weeks, was given four doses of 12, 20, 30, and 20 cc. at three day intervals. He was very little improved at the end of four weeks. Because of his anemia he was given two transfusions which could well have explained the slight improvement he made. At the end of four weeks he still had bad and rather frequent paroxysms. This case showed a blood count on admission on February 25, 1939, of Hgb. 65 per cent, RBC 4,000,000, WBC 57,850, Polys 76, Lymphs 22, Monos 2. On March 4 the blood examination after two transfusions showed: Hgb. 100 per cent, RBC 5,200,000, WBC 29,000, Polys 47, Lymphs 50, Monos 2, Eosinophils 1.

A fourth case was an infant of three months who had had whooping cough for two weeks when the hyperimmune whooping cough serum was given. She received three doses of 10 cc. each at two day intervals. Her blood examination on admission showed: Hgb. 60 per cent, WBC 31,030, RBC 3,375,000, Polys 16, Lymphs 84. Because of her anemia she was given two small transfusions on successive days in conjunction with the hyperimmune serum. Her last dose of hyperimmune serum was given at the end of the third week. Her blood examination following the transfusions and serum showed: Hgb. 85 per cent, RBC 4,150,000, WBC 25,860, Polys 20, Lymphs 80. A very definite but not spectacular response to the serum was obtained in her case.

In three of these four cases a definite response was obtained. Those receiving the serum early responded more promptly. The other case was too late in the disease to expect much result. On account of the severity of his case he was given large doses.

The hyperimmune whooping cough serum is otherwise known as Lyophile "Pertussis Immune" serum. "This serum is prepared by pooling the bloods of a number of healthy adults who have had whooping cough in childhood and whose protective substances have been 'fortified' by repeated courses of Sauer's vaccine. The technique of collection and preservation fulfills all the requirements of the United States Public Health Service." This product may be obtained from the Philadelphia Serum Exchange, Children's Hospital, 1740 Bainbridge Street, Philadelphia, Pa. It may be of value in the treatment of whooping cough if given early in the disease. Twenty to thirty cc. may be given at one dose, and two or three doses may be given.

Rabies Vaccine

Rabies vaccine, of course, should be given as early after the bite of a rabid animal as ossible. A delay of two or three days is if the bite is not located on the head or ce. The original 21 day treatment has been supplanted by the 14 day treatment—a saving of no little consideration.

Measles

In 1927 a number of high school boys who had recently had measles were bled and their serum was given to infants and children who had been exposed to measles. It was found that if as much as 5 or 10 cc. of recently convalescent serum was given before the seventh day of exposure measles could be prevented in the great majority of cases. Since then this idea of convalescent serum or whole blood has been extensively used to prevent measles and other infectious diseases, especially in feeble infants. Dr. McKhann, of Harvard, has perfected a commercial product, "Immuno-Globulin", which accomplishes the same protection with much less volume in dosage. Two cc. of Immuno-Globulin repeated in three or four days usually protects, if given within seven days from the time of exposure.

The following charts show the results I have obtained in the past ten years with the three methods of procedure. The whole blood injections have some disadvantages, but in my hands have yielded the highest percentages of protection.

Year	*No. Cases*	*Exposed*	*Amt. Given*	*Completely Protected*	*Partially Protected**	*Not Protected*
			CONVALESCENT SERUM			
1928	69	1-7 days	5-10 cc.	43	25	1
1928	15	8-12 days	5-10 cc.	8	7	0
TOTAL	84			60.7%	38.1%	1.2%
			IMMUNO-GLOBULIN			
1938	92	1-7 days	2 cc.	53	32	7
1938	5	8-12 days	2 cc.	1	2	2
TOTAL	97			55.7%	35%	9.3%
			WHOLE BLOOD INJECTIONS			
1933	107	1-7 days	20-40 cc.	60	43	4
1933	24	8-12 days	20-40 cc.	9	11	4
1938	32	1-7 days	20-40 cc.	24	8	0
1938	1	8-12 days	20-40 cc.	0	0	1
			SUMMARY			
Whole Blood	164	1-12 days	20-40 cc.	56.7%	37.8%	5.5%
Convalescent Serum	84	1-12 days	5-10 cc.	60.7%	38.1%	1.2%
Immuno-Globulin	97	1-12 days	2 cc.	55.7%	35. %	9.3%
TOTAL	345			57.4%	37.1%	5.5%

*Very slight rash, no temperature.

DISTRIBUTION OF SYPHILIS AMONG THE PATIENTS IN PEDIATRICS AND OBSTETRICAL PRACTICE

D. E. Robinson, M.D.
W. B. Perry, M.D.*
H. R. Germer, M.D.,
G. M. Leiby, M.D.†

For the past three years the campaign against syphilis in the United States has been gaining momentum. Morbidity statistics indicate that the emphasis and the energy being expended in this direction are well justified. The attitude and policy of the profession has been one of constant awareness of the true seriousness of the situation. It has attempted to avoid exaggeration of the facts, and hysterical propaganda. It has striven against indifference and the assumption that, although syphilis may be prevalent, it does not occur in private practice.

Congenital syphilis, like many other problems concerning the infant, calls for the cooperation of the obstetrician and the pediatrician. It is this territory which we have in common, the pregnant woman and her infant, that we have attempted to explore. Two surveys have been made. Members of the State Pediatric Society contributed to one. This probably gives a fair picture of the facts as experienced in private pediatric practice. Another study conducted through the cooperation of Dr. R. L. Carlton and Dr. J. R. Hege presents the problem in an industrial community of North Carolina. To them and to the obstetricians and pediatricians we wish to express our sincere appreciation for their help with these studies.

For a moment we shall consider the results of the first survey. The purpose was to determine the Wassermann status of the group studied. There were 514 infants under 12 months of age and their mothers. Five hundred and nine were white; five were colored. Among the infants 248 were males, 201 were females; in 60 sex was not reported. Four hundred and ninety had no Wasserman test; twenty-four had tests. Nineteen were negative; four were positive; one was doubtful. Three infants with positives were tested at two months; one at one month. Two mothers with positive infants had had tests which were positive in the third trimester and no treatment. One had a positive test in the first trimester and three intravenous treatments. One had had no test.

Of 506 mothers reported, 281, 55.5 per cent, had no test; 225, 44.5 per cent, had tests. Three were positive, 164 were negative, and the result of the test was not reported for 58. Fifty-five were tested in the first trimester; four in the second; eight in the third; in 158 the time of the test was not reported.

Data from institutions taking Wassermanns as a routine procedure on all pregnant women and infants have not been included. However, the result of their work is reflected in this series in so far as these infants came under the care of these pediatricians.

From these figures it appears that in private pediatric practice the Wassermann test is being used as an aid to diagnosis. Syphilis was discovered in about 0.8 per cent. Among pregnant women Wassermanns have been taken routinely by a few practitioners.

We now come to the second phase of this investigation. This survey was undertaken in the effort to find the prevalence of syphilis among parturient women, and thereby link the problem to the major one of congenital syphilis. The study was set up along the lines adopted by Leiby, Dyer, and Turner(1) in their survey of the Eastern Health District in Baltimore. These investigators have shown that the study of syphilis in the pregnant woman is the best index to use in evaluating the amount of syphilis in a community. The sample of population produced year after year by pregnant women is quite representative of the total population. Pregnancy selects a cross section of the population indiscriminately.

A large city in the Piedmont region of North Carolina was selected to make the study. This city is made up of a population 65 per cent of which are white and 35 per cent colored. In the area marked out in the city for the study live approximately 60,000 people. Practically all of the colored group live in this area. All of the births occurring in this area during 1938 were investigated.

This city has diversified industry, chief

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1. Leiby, Dyer, and Turner: The Prevalence of Syphilis Among Parturient Women As An Index of the Prevalence of Syphilis in the Community; to be published.

among which is the handling and manufacture of tobacco products. The nature of the work performed gives a relatively stable population. However, at certain times of the year there is an influx of people who work for a short time and then leave to return at the same time the following year. The list of births occurring in this area was obtained from the official birth records in the health department. In the study we chiefly resorted to the "shoe leather" type of epidemiology by door to door canvass of the women in the group.

In this group of 428 white women and 611 colored women who were delivered during 1938 in this area, syphilis was discovered in 1.2 per cent of the white women and 7.1 per cent of the colored women. The negative Wassermann test was found in 27.8 per cent of the white women and in 47 per cent of the colored women. Of those not tested 71 per cent were white and 45.8 per cent were colored women.

Of the women with a positive syphilis status approximately a third received treatment during pregnancy. The idea was quite widespread among the clinic patients that treatment for syphilis received regularly prior to conception should be discontinued during pregnancy.

In many instances the treatment was instituted late. Treatment varied from a few injections of bismuth or arsenic up to adequate treatment with bismuth and arsenic throughout pregnancy.

Our investigation revealed that 8.6 per cent of the white parturient women and 15 per cent of the colored women received a Wassermann test during the first trimester of pregnancy. The peak in both races was reached during the second trimester, when 12.2 per cent of the white women and 19.3 per cent of the colored women in the group received a Wassermann test. During the third trimester 4.2 per cent of the white women and 8.1 per cent of the colored women had a Wassermann test.

In many instances we questioned women with a positive syphilis status who had a negative Wassermann test during pregnancy. Often they made no mention to the physician who saw them at this time of their past treatment for syphilis. Some purposely misled the physician as to their past syphilis status. In addition to the Wassermann test it was necessary to question the woman thoroughly concerning past pregnancies. This assumed increasing importance in the face of a negative Wassermann test. It is well known that treatment received in the past probably sufficient to reverse the Wassermann test will not always prevent congenital syphilis in the offspring of the present pregnancy, and will cause some cases to be overlooked.

The families were classified as to their economic status. Those in class A belong in the higher economic bracket and are able to afford luxuries. Class B families have the necessities and a few luxuries. Those in class C have the bare necessities of life, and many are dependent on charity. It has been found that this method of grading is as efficient as a more complicated method of appraisal.

Among the 430 white women interviewed we found 23 per cent to be in class A. None in this group were found to have a positive syphilis status. One third had a Wassermann test. Two thirds were in the unknown category. Forty-eight per cent of the white women were in class B. None were found with a positive syphilis status among this group. In this group 16.6 per cent had a Wassermann test, and 83.4 per cent were unknown. In the class C economic status we found 28.6 per cent of the entire distribution of white women. There were four women in this group with a positive syphilis status. Nearly half of class C had received a Wassermann test, 57 being of negative syphilis status. The highest percentage of Wassermann tests taken in the white group was found among the women of class C economic status. This would seem to indicate that the index of suspicion was higher among physicians when they considered white patients of this class.

Now when we consider the distribution of the colored women according to syphilis and economic status we find that of the 603 women about 1 per cent are in class A, 54 per cent are in class B, and 45 per cent are in class C.

Here again, as with the white group, there were no cases of syphilis associated with the A economic status.

Among the colored women in class B we found nine with a positive syphilis status. This represents a syphilis rate among the known of 4.6 per cent.

In class C we find that 51 per cent of the colored women had a Wassermann test. The incidence of syphilis in the tested group was 12.9 per cent.

If it be assumed that the tested and untested individuals of class C were homogeneous, then by applying the specific rate of the known to the unknown portion of the population it could be reasonably expected that 4 more cases existed in the white group and 17 more in the colored. This suggests that 57 per cent more syphilis was present among this group of pregnant women than was observed.

In the study of stillbirths we found 10.8 per cent of the total number to be associated with a mother of positive syphilis status. 48.6 per cent of the stillbirths were associated with a negative Wassermann test in the mother.

The study of the premature babies showed the same general trend. Here there were 16.6 per cent of the premature babies associated with a positive syphilis status in the mother. The mothers of 30 per cent of the premature babies had a negative syphilis status. The mothers of 53.4 per cent of the premature babies had no Wassermann test. The percentage of prematures associated with mothers of positive status was found to be 35 per cent, considering only those whose status was known.

It is appreciated that the small numbers in these groups make the rates unreliable, but it is the intention and hope of the authors that further studies of the same population be carried out at regular intervals. We believe that this study will serve as the base line in evaluating the progress of syphilis control in the pregnant women of this community.

Importance of the General Practitioner.—Can the public get along without the general practitioner? To those who are in a position to see the helpless flounderings of the unfortunates who pass from specialist to specialist the answer is very clear. Never was the sound general practitioner more important than he is today. Never was the public in need of wise, broadly trained advisers so much as it needs them today to guide them through the complicated maze of modern medicine. The extraordinary development of medical science, with its consequent diversity of medical specialism and the increasing limitations in the extent of special fields—the very factors, indeed, which are creating specialists, in themselves create a new demand, not for men who are experts along narrow lines, but for men who are in touch with many lines.—Peabody, Francis W.: Doctor and Patient, New York, The Macmillan Company, 1939.

THE PLACE OF EDUCATION AND PUBLIC HEALTH IN CANCER CONTROL

C. C. Carpenter, M.D.
and
R. P. Morehead, M.D.

Wake Forest

We might simplify this discussion and save time by saying that, in our opinion, the hope for cancer control rests with the two agencies mentioned in our title. But in medicine, as in many other things, we must constantly call attention to seemingly obvious facts. Recently at a staff meeting of the Memorial Hospital in New York, Dr. Ewing said: "Cancer is by far the most important public health problem among the many that are now occupying public attention." During the campaign put on by the Women's Field Army this year, we have visited almost every section of North Carolina, and in every section we have found the public eagerly seeking information about cancer.

When one of us (Carpenter) served as the first Chairman of your Committee on Cancer, Dr. J. W. Cox, Southern Representative of the American Society for the Control of Cancer, came to inform him of a movement by the Federation of Women's Clubs to have cancer knowledge disseminated by that organization. Obviously, their interest was stimulated by the knowledge that approximately 45 per cent of deaths from cancer are due to involvement of the reproductive organs in women. At the National Meeting of the Federation that year (1934) the movement was adopted as the Women's Field Army. They agreed to carry on their program under the direction of the Cancer Committee of the various state medical societies.

The organization in North Carolina began in 1937. It has a State Commander, Mrs. D. S. Coltrane, and various "captains" and "lieutenants" in the districts, counties, and towns of the state.

As most of you know, their drive to gain funds and to disseminate knowledge to the laity took place during the month of April. It is along the usual plan of such organizations as the Red Cross. People are asked to enlist and to contribute one dollar or more for the membership.

The commander, speakers and helpers

serve without compensation, and in the majority of cases without even expenses. All funds go to pay for literature and posters. Funds have not been received sufficient to carry on the work, so that they now are more than five hundred dollars in debt. It is their hope to remove that debt and raise sufficient additional funds to start a permanent cancer clinic.

But they keep before us the subject of cancer. They are now asking the State Board of Health to adopt cancer control as a part of its program.

The first State Board of Health was established in Massachusetts on June 21, 1869. Cancer was first mentioned in its report of 1896. A definite cancer control program was first established by the same board of health in 1925, and then only after interested laymen had demanded it. Many physicians and the Commissioner of Health objected to the state's including cancer in its program, claiming that it did not come within the scope of public health. We, no doubt, will face similar opposition in North Carolina. But we must not interpret public health work in the narrow sense of relating only to contagious diseases that may become a public menace. Instead we would do well to think of it as expressed by the first chairman of the Massachusetts board in his report, when he said, "The State Board of Health will adopt the fine old maxim, pagan though it be, that nothing which pertains to humanity in its widest sense, will this board deem foreign to its aims."

Since cancer can be prevented by correcting so-called pre-cancerous conditions, systematic health education is imperative, if we are to show results. The only agency capable of carrying on a sustained and effective program is the State Health Department.

The approach to cancer prevention must be a cooperative plan between the public, the private physician and the State Health Department. We are now effectively interesting the individual in helping himself. He is demanding and getting information about preventive methods. If he is to use this information correctly, the private physician must be prepared to handle his case in the light of the knowledge that exists. Unfortunately, the great majority of physicians are kept so busy practicing curative medicine that they have no time to consider preventive measures. This is evidenced by the fact that the state-wide clinics that were held at the Wake Forest Medical School were attended by men majoring in cancer treatment. The general practitioner has been conspicuous by his absence.

The Massachusetts Board of Health in the beginning had the same experience. During the first two years the clinic was established only 51.4 per cent of the patients were referred by physicians; but eight years later they were sending 77.3 per cent of the cases.

In our opinion, the key man to the entire program must be the county health officer, and through him the general practitioner must be reached. The public health man must keep constantly before the private physician the necessity for taking early diagnosis seriously. We have "preached from the house top" that the family physician is the first line of defense in cancer control, but we have not altogether succeeded in persuading him to accept the role. This he must do if cancer is to be diagnosed and cured in the early stages. We all must admit that the annual health examination movement has not progressed rapidly, because the family physician has not interested himself in it.

We would have in the end a three way cooperative movement combining the efforts of the county health department, the family physician, and the public.

Results would be obvious. We do not have to guess, with the extensive knowledge available about cancer, that the mortality could be easily cut in half. Perhaps the knowledge that all cancer is recognizable while yet a localized lesion that can easily be removed is so commonplace to physicians that they take it lightly. Certainly there are statistics enough available to show that about 97 per cent of cancer of the cervix develops in those having improperly treated endocervicitis; that Lugol's solution will often reveal lesions too small to be seen otherwise; that transillumination of the breast will reveal small tumors not detectable by the old method of palpation alone; and many other facts too numerous to mention.

Public Health through health education has always taken the lead when preventive measures have succeeded. Cancer must be included in the public health program, as something "which pertains to humanity, in its widest sense."

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APRIL, 1940

THE EIGHTY-SEVENTH ANNUAL MEETING

Since scientific progress is made chiefly by a process of trial and error, it is inevitable that errors must occur, if progress is to be made. It is now generally agreed that the Medical Society of the State of North Carolina made an error last year in its trial of a cruise to Bermuda for its annual meeting. Although apparently successful for bankers and lawyers, cruising does not make for a successful medical meeting. The papers presented—as witness those in the first issues of the NORTH CAROLINA MEDICAL JOURNAL—were of a high order; but it was discouraging to their authors to present them to mere handfuls.

This, however, is another year; and the 1940 meeting, to be held at our favorite Pinehurst, should attract a record attendance. The chairmen of sections have been hard at work preparing good programs. President William Allan has carried on in spite of physical handicaps—so let us show our appreciation by giving him the largest attendance yet recorded. Last year many faithful ones regretfully broke long attendance records. They can begin new records, however, with the reasonable assurance that it will be many years before another cruise is undertaken.

Osler's time-honored definition of the medical society as "a school in which the scholars teach each other" is eternally appropriate. "The society helps to keep a man 'up to the times', and enables him to refurnish his mental shop with the latest wares. It keeps his mind open and receptive, and counteracts that tendency to premature senility which is apt to overtake a man who lives in a rountine."(1)

The question that every doctor in North Carolina should ask himself is not "Can I afford to go to Pinehurst?", but "Can I afford not to go?".

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1. Osler, William: On the Educational Value of the Medical Society, from Aequanimitas and Other Addresses, Philadelphia: Blakiston, 1930.

* * * *

"NOW IS THE TIME FOR ALL GOOD MEN—"

The National Physicians Committee for the Extension of Medical Care is fighting the battles of the rank and file of the medical profession of the United States. There has been some quibbling as to whether such an organization should have been formed, or whether the American Medical Association should have entered the conflict instead. There are arguments on both sides, but these arguments are largely academic and beside the mark. The National Physicians Committee is acting as the champion of organized medicine in its struggle against those who would regiment the physicians of America as those of Europe have been regimented. Let us who are in the ranks not lose sight of the fact that the men who constitute the executive board of the Committee are all men of unquestioned ability, integrity and force, and are giving freely of their time and intellect to fight our battles. Let us for whom they are fighting back them up with our support, financial and otherwise. A check sent to Dr. N. S. Davis, III, 700 North Michigan Avenue, Chicago, will help furnish ammunition for these gallant defenders of the medical faith of America.

REPLY TO DR. SCHAFFLE

The North Carolina Medical Journal is glad to present Dr. Karl Schaffle's criticism of the editorial in the February issue, "The Scarcity of Doctors". This journal belongs to the whole membership of the Medical Society of the State of North Carolina, and welcomes free expression of opinion in its columns, so far as its space limits will permit.

First of all, this journal appreciates the very kind reference to our first two issues, knowing that it is "praise from Sir Hubert". In return, it may be truthfully said that Dr. Schaffle is doing an excellent job as editor of the *Bulletin of the Buncombe County Medical Society.*

Next, the editor of the North Carolina Medical Journal wishes to state emphatically that he does not expect to follow in the wake of Dr. Fishbein or of anybody else; but he does intend, to the best of his ability, and with the help of the editorial board, to make the magazine speak the sentiments of the majority of the doctors of North Carolina. Dr. Schaffle seems to attach undue importance to Dr. Fishbein's views on medical practice. Dr. Fishbein has merely carried out very ably the mandate of the 116,500 members of the American Medical Association, as expressed repeatedly through its House of Delegates.

The North Carolina Medical Journal is not alone in fearing the socialization of medicine. A recent bit of proof was afforded by a nation-wide referendum conducted by *Modern Medicine.* Of 20,215 United States doctors—including 241 from North Carolina—85 per cent (from North Carolina, 87 per cent) said they would refuse to cooperate with a federal legislative program tending toward drastic curtailment of the private practice of medicine. Eighty-eight per cent thought that such a program would result in a deterioration of medical service in the United States.

"As for Russia", Dr. Schaffle will have to go back nearly eighty years to antedate state medicine. In an article strongly advocating socialized medicine, Dr. Henry Sigerist(1) states that "as early as 1864, Russia established a complete system of state medicine for the rural districts; since Russia is an agrarian country, this meant that the majority of the population received medical care from salaried district physicians and paid for their services through taxation." Since most of the really great medical discoveries have been made since 1864, it is easy to believe that Russia's health has improved since then.

Even if Russia's physical health has been improved, its moral and spiritual health certainly has not. The total lack of any national sense of honor and of individual self-respect in that country and its ally, Germany, is a horrible example of the fruits of totalitarianism. To quote again the last sentence of the editorial in question: "It will be agreed that there are many other factors than socialized medicine to explain health conditions in Germany and other European countries; but the stubborn fact remains that the socialization of medicine was the entering wedge for totalitarianism in Germany and Russia."

Certainly it is to be hoped that this new journal will "take a more independent view of the social problems of medicine than to blindly fall into the ruts made by others." However, comparing the progress made in this century by American medicine with that in Europe (even Sigerist admits that "American leadership in medical science is universally recognized"), it seems to this journal that in upholding the American way, it is following a brightly blazed trail, and avoiding the ruts made by European medical systems.

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1. Sigerist, Henry E.: The Realities of Socialized Medicine, Atlantic Monthly, 163:797 (June) 1939.

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North Carolina doctors may be justly proud of the two monthly Bulletins published by county medical societies. One of these, the *Bulletin of the Buncombe County Medical Society,* is older than our North Carolina Medical Journal, being now in its fourth volume. It is published in Asheville under the able editorship of Dr. Karl Schaffle, who succeeded Dr. G. W. Kutscher, Jr. this year. The other publication, the *Bulletin of the Mecklenburg County Medical Society,* made its first appearance in March, edited by Dr. T. W. Baker. Both of these Bulletins present a very attractive appearance, well suited to their content.

CASE REPORTS

SOLITARY INTRACRANIAL TUBERCULOMA IN AN ADULT

F. T. Harper, M. D. and
I. Horowitz, M. D.

Sanatorium

The incidence of tuberculoma of the brain is about 2 to 4 per cent of brain tumors, according to Dott and Levin(1), and about 1.6 per cent in Cushing's series. The ratio of tuberculomata to malignancies of the brain is 1:30(2). This condition is much more frequent in children than in adults; according to Warthin it constitutes over 50 per cent of brain tumors in children(3). As age advances it becomes rare. Tuberculomata vary in size from a pea to an apple, and they are more often multiple than solitary. They produce symptoms similar to those of any other brain tumor, depending on the location. They usually undergo caseation, and very rarely calcify. All are fatal regardless of therapy. There is a predilection for the cerebellum, cerebrum and pons in order named. Most cases occur in males. Literature is abundant on tuberculomata of the brain occurring in children. Many cases are reported by Corica(4), Zappert(5), Gleich(6), Freidenwald(7), and Ferris(8). A case occurring in an adult has been reported by Ardin(9) in which there was a solitary tuberculoma in the pons. Montgomery(10) reported a tuberculoma in a sixty-nine year old white male in the corpus callosum with miliary tuberculosis, but no meningeal involvement. Allende(11) reported a case in a twenty-three year old male involving the cerebellum, associated with meningitis and miliary tuberculosis. Carnot(12) reported two cases in adults, one in a twenty-eight year old patient with miliary tuberculosis and meningitis in which there was a tuberculoma in the left thalamus invading the internal capsule. The other was in a patient twenty years of age, with a tuberculoma in the right thalamus. Others briefly reporting are Dimitri(13), Bremond(14), McClelland(15), Tomasi(16), and Sorrel(17), each reporting one case, and Ferris reporting 4 cases confirmed by autopsy. Tuberculomata occur less frequently in the brain than in any other part of the nervous system. According to Osler they exist in three ways: As an acute miliary infection causing meningitis and acute hydrocephalus; as a chronic meningo-encephalitis, usually localized and containing small tuberculous nodules; as a solitary tuberculoma.

Case Report

R. H., a twenty-seven year old, colored sawmill worker, was admitted to the North Carolina Sanatorium July 28, 1939, acutely ill and unable to stand or sit. He was not mentally alert, and the history is rather vague.

History of present illness: This patient had a series of complaints: paralysis of the right arm and leg and left side of the face, cough and expectoration, and draining glands in both inguinal regions. On March 14, 1939, he had been admitted to the Anson County Sanatorium, complaining of pain and swelling of the scrotum of about three months' duration. Following spontaneous rupture with drainage for a month, an incision had been made into the scrotum one week prior to his admission. There had been no evidence of healing. The patient stated that he had had a productive cough for several years. At this time the physical findings in the left lung were those of a far advanced

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1. Dott, Normal M. and Levin, Ernest: Intracranial Tuberculoma. Edinburg M. J. 46:36 (January) 1939.
2. Schidlowsky, P.: Zur Frage der Tuberculome des zentralen Nerven-systems. Arch. f. klin. Chir. 155:703-710, 1929.
3. Jaffe, R. H. and Schultz, A.: Relations Between Tuberculomas of Central Nervous System and Tuberculous Changes in Other Organs. Am. Rev. Tuberc. 33:302 (March) 1936.
4. Corica, A.: Contribute clinico ed anatomo-patologico allo studio del Tuberculomi cerebrali multipli. Pediatria, 24: 660-666, 1918.
5. Zappert, J.: Der Hirntuberkel im Kindesalter, Arb. a. d. Neurol. Institute a. d. Wien Univers. 16:78-150, 1909.
6. Gleich, Morris: A Case of Solitary Cerebellar Tuberculoma. Arch. Pediat. 42:273-275 (April) 1925.
7. Freidenwald, Edgar B.: Tuberculous Tumors of the Brain. Am. J. Dis. Child. 8:508 (June) 1915.
8. Ferris, Henry W.: Eight Cases of Tuberculoma of the Brain Found at Necropsy. J. A. M. A. 92:1670 (May) 1929.
9. Ardin-Deltell, M.: Tubercule of the Protuberance. Rev. neurol. 2:164-173 (October) 1925.
10. Montgomery, L. C.: Hemiplegia Due to Tuberculosis of the Corpus Callosum, Canad. M. A. J. 29:375 (October) 1933.
11. Allende, I.: Tuberculoma of the Cerebellum with Syndrome of the Pontocerebellar Angle. Rev. Asoc. med. argent. 34:45-68, 1921
12. Carnot, P.: Two Cases of Tuberculoma of the Optic Layer. Bull. et mem. Soc. med. d. hop. de Paris, 52:837 (May 31) 1928.
13. Dimitri, V.: Tuberculoma of the Pons Cerebelli (pons varolii). Rev. de especialid. 1:600 (July 30) 1926.
14. Bremond, M.: Tuberculoma of the Cerebellar Hemisphere with Pontocerebellar Symptoms. Rev. d'oto-neuro-opht. 7:26 (January) 1929.
15. McClelland, Carl: Tuberculoma of the Cerebellum. J. Michigan M. Soc. 121:15 (January) 1922.
16. Tomasi, Lugi: An Interesting Case of Tuberculoma of the Right Cerebellar Lobe. Policlinico (sez. prat.) 32: 277-279 (February 23) 1925.
17. Sorrel, E. and Malgras, P.: Supradural Tuberculoma. Bull. et mem. Soc. nat. de chir. 60:1412 (December 29) 1934.

pulmonary tuberculosis, and in the right lung moderately advanced tuberculosis. Both testes were swollen, and there was pus coming from an incision about an inch and a half long in the left side of the scrotum. The patient left the Anson County Sanatorium without permission March 25, but was returned April 21 to be hospitalized until he could be admitted to the North Carolina Sanatorium. The findings at that time were about the same except for a spontaneous rupture of the right inguinal gland. During his hospital stay he ran a remittent fever of 99 to 101°, with an occasional rise to 102°. He complained of severe headache on May 26, 27, and 28, which was not relieved by the usual analgesics. He became incontinent on July 5, and from then on rapidly grew weaker. He entered the North Carolina Sanatorium July 28.

Physical examination upon admission: The patient was a poorly nourished, acutely ill colored male, weighing 100 pounds. He had a right hemiplegia with hypoesthesia to pain in the right arm and leg. Thermic sensation was not appreciated in this same area. On the right, there were no increased tendon reflexes, ankle clonus and positive pyramidal tract signs were present, and abdominal reflexes were absent. There was anisocoria, with the left pupil dilated, and internal left strabismus and nystagmus. There was marked exopthalmos of the left eye, with choked discs. Tactile anesthesia of the left check existed. There was hypoesthesia of the left half of the tongue, which deviated to the right upon protrusion. There was a draining sinus in the right inguinal region and one from the scrotum.

Physical findings in the chest were those of a far advanced bilateral pulmonary tuberculosis with cavitation in the upper half on each side. Chest x-rays revealed bilateral pulmonary tuberculosis, far advanced on each side, with cavitation in the apices.

The diagnosis was bilateral, far advanced pulmonary tuberculosis, complicated by a tuberculous adenitis, epididymitis and tuberculoma of the pons.

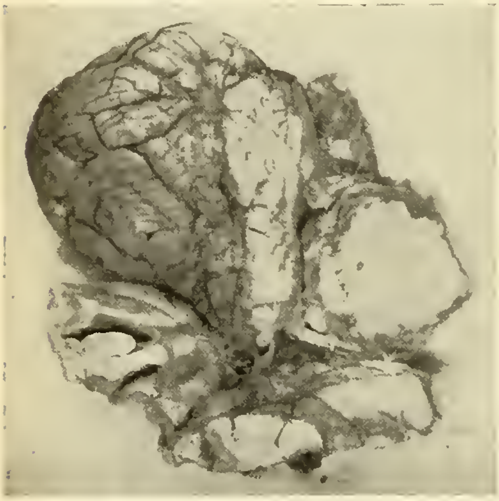
The patient remained in the hospital fifteen days, becoming steadily worse until his death on August 12, 1939. His temperature ranged from 96 to 103, and his pulse averaged 120.

Autopsy: There was a pronounced bilateral exophthalmos. There was a wide incision wound with clean borders disclosing the musculature below in the right inguinal region. A draining sinus was seen in the lower portion of the scrotum, and there was a sinus present in the region of the left cord. Numerous decubitus ulcers were present over the sacral region. The dura showed no abnormalities and stripped with ease from the brain. There was an increased amount of fluid present. The brain was removed with difficulty. The gyri were somewhat flat and the sulci shallow. The left cerebral hemisphere appeared somewhat larger than the right. No mass could be palpated. The arachnoidea was thin and smooth throughout. On inspection no abnormalities appeared in the base of the brain. When the brain was sectioned in the usual manner, the lateral left ventricle was found somewhat dilated. The internal capsule and sub-cortical ganglia presented no gross abnormalities. The third ventricle was somewhat dilated and the posterior portion of the pons to the left of the midline presented a mass the size of a hickory nut, somewhat firm on palpation, protruding into the left portion of the fourth ventricle. The surface of the mass was studded with grayish white nodules the size of a pin head. When cut open, the mass was somewhat yellowish in appearance, with caseous material in the center. The meninges did not appear to be involved. The cerebellum showed no gross pathology. The base of the skull and the skull cap presented no abnormalities.

The lungs confirmed the roentgenological findings.

In the small pelvis to the left of the urinary bladder was found an abscess as large as a hen egg, the contents of which were foul smelling, thick, purulent material. When the bladder was removed small abscesses were encountered to the left of the prostatic portion of the urethra. The bladder musculature was somewhat thickened, and the mucous membranes were injected. No gross ulcerations were visible. The testes were removed and showed no gross abnormalities. Both the right and the left epididymis were beaded and enlarged, and when they were opened, frank pus was expressed from the lumen. On the right kidney a bean sized tuberculoma was seen extending from the medulla to the pelvis. The center of the tuberculoma was caseous.

Sections from the brain presented a conglomerate tuberculoma with occasional giant cells lying just at the periphery of the central necrosis, about which were layers of epitheliod cells and round cells. Sections from the kidneys and lungs showed much the same picture.



Photograph of the brain, showing a section through the hind brain. The tuberculoma can be seen in the left half of the pons.

Complete anatomical diagnosis:

1. Cachexia.
2. Bilateral, chronic cavernous apical tuberculosis with bronchogenic dissemination in both lungs.
3. Tuberculoma of the pons varolii.
4. Bilateral tuberculous epididymitis with draining sinus.
5. Tuberculoma of the right kidney.
6. Tuberculous lymph-adenitis with rupture through the skin in the inguinal region.

The Physician's Reward.—In the practice of medicine it is all too often the case that no monetary recompense is received at all, and more frequently the recompense is wholly inadequate to the value of the services rendered. The physician does not consider that he is receiving a **quid pro quo** when he is paid by his patient. It is not that he sells his opinion at so much a yard. He is entitled to a living, yes, but more than that he takes a satisfaction in seeing that the results of his advice have brought aid and comfort to the person who sought it.—Winfred Overholser: The Broadening Horizons of Medicine, Science 90: 2338 (Oct. 20) 1939.

DUKE HOSPITAL CLINICO-PATHOLOGICAL CONFERENCE

NOVEMBER 22, 1939

Dr. Hanes (reading the clinical summary*): The patient was a thirty-nine year old colored man who was admitted because of pain behind the sternum for one week.

Family history was non contributory.

Marital history: His wife had been five times pregnant. The last three pregnancies terminated in miscarriages at five or six months.

Past history: General health had been excellent. The right ankle was fractured ten years ago, and since that time had become slightly swollen and painful during damp weather. He had had few upper respiratory infections and gave no history of rheumatic fever. He had had several root abscesses. About fourteen years ago, at the age of twenty-five, he had an episode of mild pain behind the sternum which he thought was "indigestion"; this persisted for two or three days. During the past two years he had had two blood Wassermanns, both of which were negative. There was no history of gonorrhea and no recent weight loss.

Present illness: One week previous to admission he began to have "choking sensations" behind the sternum after having eaten corn for supper. He attributed this to "indigestion" and took "Black Draught", castor oil, etc. After that he had three or four bowel movements daily, in spite of which the "indigestion" continued. On the day previous to admission he experienced slight pain in the region of his second lumbar vertebra, which persisted throughout the day. Because of this he ceased working early in the afternoon. He had worked regularly until that time, and during the week he had gotten wet in the rain several times. On the evening previous to admission he noted sharp, catching pains behind the sternum which were worse on inspiration and tended to make him short of breath. This pain had persisted with varying degrees of severity. On the morning of the day of admission he awoke with pains in the right hip, right ankle, left knee and fourth finger of the left hand. He was hardy able to walk all day. He had had no chills. The temperature had not been taken but he "felt hot" for two days previous to admission.

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*The clinician had not seen the patient and his only information was obtained from the clinical summary.

Physical examination: Temperature was 39.9°C; pulse, 118; respiration, 28; and blood pressure 120/80. The patient was an obese negro male of thirty-nine years who did not appear particularly ill. The skin was warm and dry. There were no eruptions. The axillary lymph nodes bilaterally were barely palpable. Movements in fourth finger of left hand were painful. On motion of the right hip he complained of pain localized mainly at the midportion of Poupart's ligament. There was no joint tenderness. The left knee joint contained a small amount of fluid, and there was slight increase in temperature about the joint, movements of which were painful. The right ankle was slightly swollen, with slight increase in local heat, and there was marked pain on motion of the joint. The teeth were dirty, worn and carious, and several were broken off even with the gums. There was marked peridental recession. Tonsils were small and pale. The posterior pharyngeal wall was clean and not reddened. The neck veins were not distended. Lungs were clear. The cardiac border could not be definitely determined, because of the thick chest wall, but the heart seemed to be within the outer limits of normal size. The heart sounds were quite distant; the rhythm, regular. A soft apical systolic murmur was heard. No friction rub was heard. The abdomen was negative; genitalia normal; rectal examination negative. There was no peripheral edema. Reflexes were normal.

Accessory clinical findings: Blood: Hemoglobin was 14.3 grams or 92 per cent; red blood cells, 5,030,000; white blood cells, 10,050. Polymorphonuclear leukocytes, 82 per cent; large lymphocytes, 5 per cent; small lymphocytes, 10 per cent; monocytes, 3 per cent. A smear was not remarkable. A sickle cell preparation was negative. The sedimentation rate was 42 mm. per hour, corrected. Wassermann and Kahn reactions were negative. Urine: Albumin 1 plus; 3-5 white blood cells to the high power field in centrifuged specimen. A routine blood culture was negative. Fluoroscopy and film of the chest showed diffuse mottling throughout both lungs which was thought to be consistent with bronchial pneumonia or passive congestion. The heart was diffusely enlarged. X-ray of the left knee showed nothing abnormal. X-ray of the right ankle revealed an old, healed osteomyelitis, involving the distal end of the tibia. An electrocardiogram, made one and one-half hours before the death of the patient, revealed P-R interval 0.24 seconds. There was no definite axis deviation. T 1, 2 and 3 all showed elevated segments with upright T waves.

Course in the hospital: The patient was given complete bedrest and put on soft surgical diet. Fluids were forced. He was started on aspirin, which afforded almost complete relief, both from the joint pains and chest pain. On the following morning the most painful joints seemed to be the left hip and right knee. There was very little pain in the right hip. The patient, when seen at 3 p.m. of the second hospital day, remarked that he felt well enough to go home. At 3:30 p.m. the nurse heard him gasping for breath. He made eight to ten gasping efforts and then ceased to breathe.

From the information furnished us in this clinical summary we are justified, I believe, in saying that this colored man of thirty-nine was suffering on admission from an attack of acute rheumatic fever. We should note carefully the history of "an episode of mild pain behind the sternum" which he suffered at the age of twenty-five, for it is probable that this is intimately connected with his present illness, both being due to rheumatic heart disease. The "sharp, catching pains behind the sternum which were worse on inspiration, and tended to make him short of breath" preceded by a few days the polyarthritis of his present illness, and strongly suggest pericarditis as the cause. The electrocardiographic findings support this view.

We are told that a "soft, apical systolic murmur was heard", which may have been caused by a vegetative endocarditis of the mitral valve. It is highly probable, then, that the heart was the site of a rheumatic pancarditis—pericardium, myocardium and endocardium being involved in an acute inflammatory lesion, grafted upon an older injury to the heart produced by the rheumatic attack fourteen years before. As you know, it is not at all uncommon for the heart to be seriously affected in rheumatic fever with no involvement of the joints whatsoever.

Acute rheumatic fever is so serious and disabling a disease that physicians can never have it brought to their attention too often, but the point of unusual interest in this case is the manner of death. This was sudden and totally unexpected, and leads us to a brief consideration of sudden death in general. A very excellent article on this subject by Dr. Louis Hamman(1) has furnished the statistical material which I have placed on the blackboard. Dr. Hamman has analyzed 700 cases of sudden death reported in the literature, the diagnoses having been established by autopsy. Of these, 637 (91 per per cent) died of:

(1) Sudden cardiac failure	(65%)
(2) Hemorrhage	(21%)
(3) Arterial embolism and thrombosis	(5%)

You will note that these figures strongly support the clinical aphorism that sudden catastrophes in the body are preponderantly vascular in origin. "Sudden cardiac failure" is further analyzed into:

(1) Coronary artery disease	(65%)
(2) Valvular heart disease	(21%)
(3) Myocardial disease	(10%)
(4) Cardiac hypertrophy	(3%)

But what is the exact mechanism of cardiac failure? Observations upon animals, with experimentally produced closure of a coronary artery, have thrown much light upon this question. Let me quote directly from Dr. Hamman's article: "If we look at the exposed heart of an animal which has been seriously damaged, let us say by cutting off a large part of the coronary circulation, we shall notice the following sequence of events. At first, occasional extra-systoles occur which become more and more frequent; there follows a period of ventricular tachycardia during which the rate may become excessively rapid, producing a genuine flutter; finally, all effective contractions cease and only fibrillary twitchings agitate the surface of the ventricles. This mechanism develops in the experimental animal when the faradic current is applied, when the coronary circulation is interfered with, when certain drugs are administered, digitalis, chloroform, adrenalin, etc., and frequently during various experimental procedures when no satisfactory cause for it can be assigned. As long ago as 1888 McWilliam suggested that the occurrence of ventricular fibrillation might explain sudden cardiac death in man and since the electro-cardiogram has come into use, the suggestion has been amply verified."

Diagnosis

Dr. Hanes: I believe that this man had chronic rheumatic fever which had existed for a number of years with both myocardial and valvular damage. Recently there was an exacerbation of the rheumatic fever which so disturbed the function of the heart as to lead to ventricular fibrillation and death.

Dr. Schulze: The surprising thing was the picture presented by this patient while under observation. He was a robust, 250 pound negro, who did not think he was ill. We thought he had rheumatic heart disease, but did not feel that he was very seriously ill. While he was being x-rayed the day after admission, I saw him and asked him how he felt. His reply was that he felt very well. He was sent back to the ward, and a few minutes later he was dead. The suddenness of his death was entirely unexpected by those of the house staff who examined him.

Necropsy Findings by Dr. Sprunt

Anatomical Diagnosis: Acute and chronic rheumatic fever; acute and chronic rheumatic myocarditis, pericarditis and mitral endocarditis; cardiac hypertrophy; multiple petechial hemorrhages in heart; slight passive congestion of viscera; fibrous pleural adhesions.

Gross Morbid Anatomical Changes: The pericardial sac contained 3 cc. of cloudy yellow fluid. A smear of this material showed no bacteria, and cultures of it remained sterile. The epicardium was roughened with a fibrinous exudate, and there were numerous petechial hemorrhages. The heart weighed 500 grams (the patient's weight, 100 kilos). The hypertrophy was largely due to an increase in size of the left ventricle. The valves showed no abnormalities except a small lesion 3 mm. above the free edge of the mitral valve. The mural endocardium of the ventricles and auricles showed no lesions aside from numerous petechial hemorrhages. The coronary arteries were not grossly changed. The lungs crepitated throughout and were not edematous. No evidence of passive congestion or other gross changes were seen in the other thoracic and abdominal viscera. Permission to remove the brain was not obtained.

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1. Hamman, Louis: Sudden Death, Johns Hopkins Hospital Bulletin, 55:387, 1934.

Microscopic Anatomical Changes: Some fibrinous exudate was present in the epicardium, and numerous petechial hemorrhages were seen. The epicardium was infiltrated with a number of cells. These were divided about equally between polymorphonuclear leukocytes and mononuclear cells. Many of the latter were typical macrophages. The coronary arteries showed a slight proliferation of the intimal cells. The myocardium was extensively damaged. There were numerous focal areas of necrosis, some of which were infiltrated with cells similar to those described in the epicardium. In addition to these there were some old fusiform scars around the smaller blood vessels similar to those seen in healed rheumatic fever. There were no typical Aschoff bodies but some lesions which resembled these. The lesion on the mitral valve was composed of dense fibrous tissue and collagen. On the edges of this were numerous cells. These cells were similar to those described above. No bacteria were seen in any of the sections.

Microscopic preparations of the other organs showed the splenic sinuses packed with red blood cells. The hepatic sinuses around the central vein were also slightly dilated. Aside from these, there were no other changes of interest.

Discussion

Dr. Sprunt: The interpretation of the case is that this patient had had some years previously an attack of rheumatic fever which damaged the myocardium and resulted in cardiac hypertrophy. The valves were not damaged functionally at all, although we did find a small old lesion on the mitral valve. That a practically complete recovery was made from this former attack is evidenced by the lack of typical Aschoff bodies.

Recently the patient had an exacerbation of the rheumatic fever, which led to acute damage to the myocardium and sudden death. The evidence that these lesions are rheumatic in nature rests on the fact that they are similar to the ones described as occuring in rheumatic fever and on the fact that bacteria are absent.

Dr. Hanes: It may be interesting to recall the case of a woman who died suddenly in the hospital last year of hyperparathyroidism. There was calcification in various organs with degeneration and calcification of the muscle fibres of the myocardium.

Dr. Sprunt: I recall also a case of sudden death in a patient with tuberculosis who had extensive tubercular myocardial damage.

Dr. Hanes: This patient, then, very probably died of ventricular fibrillation, the result of an acute exacerbation of an old rheumatic fever which seriously damaged the myocardium.

PHENOL GANGRENE COMPLICATING DIABETES MELLITUS

Verne S. Caviness, M. D., F.A.C.P.

Raleigh

Gangrene in diabetics is of such relative frequency that it is quite easy to attribute all such occurrences to diabetes. Uncontrolled diabetes is responsible for most cases of gangrene in diabetics, but undoubtedly there are other cases that are incidental to diabetes. Excessive lipemia and hyperglycemia are potent causes of arteriosclerosis and gangrene. Nothing should prevent the proper attention to these factors in a diabetic; equally interesting and important should be the determination of other causes.

Arteriosclerosis

In the large arteries—the elastic arteries—atheromatous plaques deposited in the intimal coat are the characteristic forms of arteriosclerosis. This process appears to be associated with errors of fat metabolism.

In the smaller arteries and in the arterioles—the muscular arteries—arteriosclerosis appears as calcification in the muscular coat. There is often an associated fibrosis of the muscular coat. The fibrosis appears to follow necrosis of muscle cells, often resulting from continued muscular strain—as in hypertension.

Diabetic patients usually show a combination of these two types. In the muscular coats of arteries and arterioles we find fibrosis and calcification with atheromatous deposits in the intima. According to Warren(1), this is an intimal type of arteriosclerosis, and may show "local thickening and hyaline changes of the intima with lipoid infiltration, the presence of cholesterol crystals or calcified deposits." These changes appear to occur with variations in any arteries.

Diabetic gangrene is the result of intimal thickening, usually gradual in development,

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1. Warren: The Pathology of Diabetes Mellitus, Philadelphia, 1938, p. 128.

but often precipitated by injury or infection in uncontrolled diabetes.

Prior to the use of Protamine Zinc Insulin, all diabetics of any age who survived as long as five years developed arteriosclerosis. With the increasing use of Protamine Zinc Insulin and a wider recognition of the importance of keeping blood sugar at a normal level at all times, there has been a sharp drop in the incidence of arteriosclerosis in diabetics(2). However, since diabetes is especially likely to develop at about the sixth decade of life, arteriosclerosis will inevitably develop in many diabetics, independently of the diabetes. Furthermore, no treatment of diabetes can prevent the development of arteriosclerosis in all cases. Hence, there must always be a small incidence of arteriosclerotic gangrene in diabetics as well as in non-diabetics.

Phenol Gangrene

Since the end of the carbolic acid era in medicine and surgery, there have been relatively few cases recognized as phenol gangrene. During this era, such cases were frequent and the literature on the subject was voluminous.

Gangrene is produced by dilute forms of phenol. A 5 per cent aqueous solution is a saturated solution. Gangrene has usually been produced by 1-5 per cent preparations. Phenol is used frequently as a local application for the relief of itching. Usually gangrene does not follow its use. Whether or not gangrene develops seems to depend on the strength of the phenol preparation, on the length of time of the application, on how closely it is confined, on the power of resistance of the skin of the individual (80 per cent of the cases occur in women), on the age of the patient, on the climate, and possibly on the amount of pre-existing arteriosclerosis.

The gangrene appears to be produced by direct action of phenol on tissues. Phenol precipitates proteins, whether in solutions or in living cells. It is not a self-limiting caustic and does not enter into any stable combination with tissue proteins; hence, it penetrates more deeply into the tissues than other antiseptics(3 4 5).

Edema of the cellular tissue is produced, blocking the circulation by mechanical pressure(6). As arterioles and arteries become involved, edema of the intimal coat obstructs blood flow mechanically in addition to thrombus formation along the site of intimal inflammation.

Phenol gangrene is a caustic process rather than a pure phenol phenomenon. A very similar gangrene is produced by 5 per cent solutions of hydrochloric acid, nitric acid, sulphuric acid, acetic acid or caustic soda or potash when applied to an extremity as a wet dressing for twenty to twenty-four hours.

Case Report

History: Mrs. H. H. G., a white female, age forty-seven, was admitted to Rex Hospital July 15, 1939. She gave a history of having had diabetes for about three years with relatively little treatment. She had not used insulin, and her diet had been very lax. Occasionally she consulted a physician, but did not follow his instructions.

Six weeks before admission she developed a vesicular rash with itching on her right second toe. She used various remedies with no noticeable effect. On July 10, 1939, five days before admission to the hospital, she consulted her physician, who prescribed an ointment containing phenol 5 per cent, iodoform, and zinc oxide, to be applied locally night and morning. The ointment was applied heavily, a dressing of cloth was wrapped about the toe, and a shoe worn daily as she went about her work.

Almost immediately, the toe began to swell and became grayish red. The swelling and redness extended along the right foot to the ankle. Pain, throbbing in character, was constant. Afterwards, the toe turned a dark bluish color.

Physical Examination: On admission to the hospital, the patient presented a toxic appearance, though apparently not threatened with coma. Her temperature was 100.8° F.; pulse, 120; respiration, 30; blood pressure, 160/80. She was still slightly overweight after losing weight gradually for three years. Fundi occuli were normal. All teeth had been removed and replaced by plates. Tonsils had been removed. Her thyroid was palpably enlarged. The aortic

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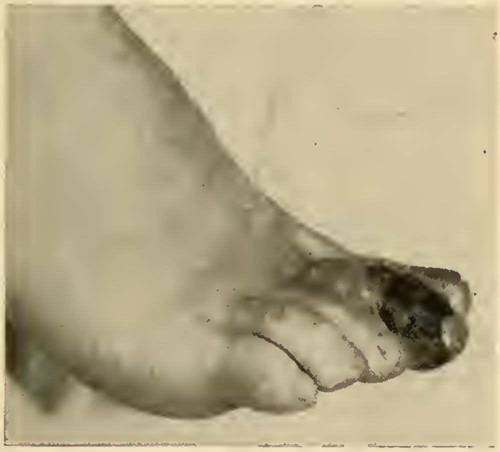
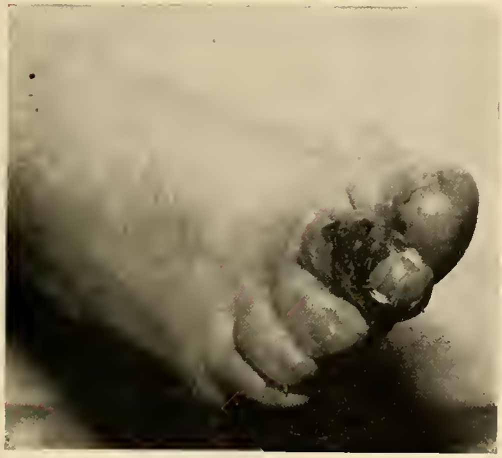
2. Warren, p. 121.
3. Cushney's Pharmacology and Therapeutics, Philadelphia, Lee and Febiger, 1928, p. 140.
4. Harrington: Carbolic Gangrene, Am. J. M. Sc. 120:4, 1900.
5. Leval, Josef, Gyogyaszat, 37:75-94, 1897.
6. Steel, William A., in Cyclopedia of Medicine, Philadelphia, F. A. Davis and Co., vol. 6, p. 15.

second sound was accentuated. Peripheral arteries appeared to be normal. Both dorsalis pedis arteries were palpable and easily compressible. The right second toe was bluish in color in some areas, red and swollen in appearance in others.

Later her toe became dark blue in color with gangrenous areas. The foot showed marked induration about the base of the toe with redness and swelling along the foot to the ankle. Pain was severe. Periostitis developed under the gangrenous areas and was resistant to treatment.





These pictures show gangrene with areas of normal tissue in the toe. There are definite evidences of dermatophytosis, especially about the great toe nail. Note induration about the base of the toe.

These pictures are good examples of the way diabetic feet should not appear.

Laboratory Findings: On admission to the hospital, the patient's urine contained a very large amount of sugar. Her blood sugar was 200 mg. Her renal threshold was 190 mg. Her blood count showed a moderate leukocytosis. Under treatment, her blood sugar quickly became normal and remained normal.

Operation: Due to extensive gangrene and periostitis it was decided to amputate the toe, partly as an economic measure to shorten hospitalization. While some areas about the toe remained normal, the involvement was so extensive that many months would have been required for healing.

On August 5, 1939, the toe was amputated under local anesthesia.

Subsequent Course: After discharge from the hospital, she continued to improve until the foot was entirely well and she could walk comfortably. Afterwards, she reduced the dose of insulin or took it irregularly, and now she has become quite lax regarding insulin and diet. She has not returned for a re-check of her blood sugar level.

Dermatophytoses

Because of the high incidence of dermatophytoses affecting chiefly fingers and toes and the tendency of many physicians to use phenol in local applications for the relief of such conditions, a warning regarding the dangers of phenol appears to be timely. The danger is greater in diabetic patients.

Summary

A case of phenol gangrene occurring in a diabetic patient is reported with a discussion of gangrene in diabetics from an etiological standpoint.

The Main Function of the Medical Profession.—Even the most forward-looking medical man must admit that for a long time to come, the main function of the medical profession will be to heal, relieve and comfort those who are sick or in distress, and plans which are devised to readjust the relationship between doctors and laymen must be based primarily on this consideration. New needs and opportunities are to be recognized and met as well as possible, but the chief thing is to be certain that in the name of the newer "Service" with its capital "S", nothing of the old-fashioned, modest but effective service of doctor to patient is lost.—Peabody, Francis W.: Doctor and Patient, New York, The Macmillan Company, 1939.

CORRESPONDENCE

Dear Dr. Johnson:

The first two issues of your journal are so superior to many state journals, that it seems unfortunate to have such an editorial as that in the February number on the "Scarcity of Doctors". Don't you think that it is rather unfair to attribute that condition and the present health of the German people to the system of socialized medicine, which they adopted over fifty years ago, when you cite the mobilization of physicians and the malnutrition and epidemics arising from the war? You also quote the laws of *last year* which reduced the course of medical study and legalized the activities of "quacks". In addition to these factors, you are probably aware of the sub-standard way of living to which the Germans were subjected during the war of 1914-'18, which was the real cause of their defeat and which persisted after the Treaty of Versailles and during their periods of inflation and depression, up to the present time. Wouldn't it have been fairer to have examined the health records of Germany for the years prior to 1914?

I hope you do not find it necessary, as the editor of a state journal, to follow in the wake of Dr. Fishbein, with his misrepresentation of the experience of Europe, including Germany before Hitler and England since 1911! Are you aware that the British Medical Association is strongly advocating the extension of its panel system to cover the families of workers and to provide all forms of care, including hospitalization? Evidently they recognize its worth. I should think that a new journal would take a more independent view of the social problems of medicine than to blindly fall into the ruts made by others.

With best wishes for continued success of The Journal, I am

Very sincerely yours,

KARL SCHAFFLE.

P. S.: As for Russia, its health has been vastly improved by socialization. That is a fact and not an inference.

A STATEMENT FROM DR. W. Z. BRADFORD

Repeated studies of maternal welfare and maternal mortality by individual physicians and critical analysis of vital statistics reveal that the high mortality rate in North Carolina is intimately related to social and economic factors peculiar to the southern states. Efforts to improve this condition must take cognizance of these sectional characteristics; hence methods of approach as adopted in other localities are not necessarily applicable to North Carolina. Among our local problems might be mentioned:

1.—A low per capita wealth, making it difficult for many people to obtain adequate medical care and producing a large number of medically indigent individuals.

2.—A widely scattered rural population—85 per cent of the inhabitants residing in communities of less than 10,000 population.

3.—A midwife system delivering 30 per cent of the population under limited control and with inadequate supervision, with no general method of removing from their care the abnormal or potentially pathological case.

4.—An inadequate or completely absent public health service in many counties and inadequate medical facilities in many others.

The complaint of the medical profession generally has been that the bad risk patient in the medically indigent group is always presented to him following neglect, or negligent midwifery.

The experience of Moore County is worthy of mention. It has had over 1000 consecutive deliveries without a single maternal death in a rural county which a few years ago had a maternal mortality rate of over 16 per 1000. A trained nurse midwife from the Lobenstein Clinic has developed a program of supervision and teaching of midwives, with a regulation of midwife practice that is applicable to every county of the state.

The current trends in maternal welfare as outlined in the proposed procedures of the United States Childrens Bureau project a wide expansion of federal interest in this field. Among the policies are included postgraduate education and training for full-time nursing personnel of state or local health agencies.

Therefore I urge the North Carolina Obstetrical Society to adopt an active policy in this matter, to wit:

Item 1. An expression as to the dire necessity and need for trained nurse midwives as full time supervisors of midwife teaching and practice in various counties of North Carolina.

Item 2. Approval of the establishment of facilities for practical training in this field in North Carolina—possibly as a course in the North Carolina Public Health School at Chapel Hill with additional practical training elsewhere.

Item 3. Recommendations that the State Board of Health and the Childrens Bureau participate in the training and possibly aid in such a program subsequently when local county economy might object to participation during a developmental period.

Item 4. Active participation and consultation with the current maternal welfare program of the North Carolina State Board of Health by the designation of a fact finding committee.

BULLETIN BOARD

The question of whether or not to include physicians' fees in addition to the cost of hospitalization in our Hospital Saving Association and other similar Associations will have to come up for discussion in the House of Delegates at Pinehurst in May. The commercial companies are selling doctors' services along with hospitalization, and this will force our hand either to do the same thing or to notify these commercial companies that we will not cooperate with them. I suggest that all County Societies thrash this matter out at home and instruct their Delegates what they wish done.

WILLIAM ALLAN.

NOTES FROM THE SECRETARY'S OFFICE

The problem of some form of medical service plan for low income groups has finally been forced upon the members of the medical profession of North Carolina. A commercial insurance company has written a medical, surgical, and hospital contract to cover the employees of a large industrial concern, causing this group to cancel its hospital service contract. In another industrial city the employees of a great textile concern are considering similar action. Needless to say, these situations have caused great apprehension in the sections of the state affected.

Dr. F. Webb Griffith's Committee on Socialized Medicine and Dr. D. W. Holt's Committee on Public Relations, as well as committees from both the Hospital Saving and the Hospital Care Associations, have been working on medical service plans to be submitted to the House of Delegates. All of these committees are unanimously of the opinion that the time has come for the medical profession to take action and keep this problem in its own hands. Similar plans are already in effect in other states, but they have been in operation such a short time that correct actuarial estimates are not available. This whole subject is fraught with many possibilities of good and evil, and it behooves the medical profession in those communities directly affected, as well as the rest of us, to be patient and to wait the findings of the committee and the action of the House of Delegates.

The Warren County Medical Society has been reorganized with Dr. G. H. Macon of Warrenton as President and Dr. H. H. Foster of Norlina as Secretary.

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The doctors throughout the state will be glad to know that Dr. W. I. Wooten of Greenville has announced himself as a candidate for the House of Representatives from Pitt County.

NEWS NOTES FROM DUKE UNIVERSITY SCHOOL OF MEDICINE AND DUKE HOSPITAL

On February 26, the Nu Sigma Nu Medical Fraternity held in the Duke Hospital amphitheatre an informal round table discussion on the "Problems of a Young Doctor in Private Practice". Participating in the panel were Dr. Wingate M. Johnson, of Winston-Salem, Editor of the North Carolina Medical Journal and former President of the State Medical Society; Professor Harold Meyer, Sociologist of the University of North Carolina; Professor Douglas B. Maggs, of the Duke University Law School; Professor Leroy Lewis, Instructor in Public Speaking at Duke University; and Dr. W. C. Davison, of the Medical School. Questions included in the discussion brought up matters of professional ethics, legal, social, and business aspects of medical practice.

On February 27, Dr. W. M. Firor, Acting Professor of Surgery, The Johns Hopkins University School of Medicine, held a clinic on "Burns".

On February 29, the Durham Drug Association held a meeting at Duke Hospital, at which Professor David F. Cavers, of the Duke University Law School, Mr. F. O. Bowman, Attorney for the North Carolina Pharmaceutical Association, and Hon. Carl Durham, Congressman from this district, gave talks on the important phases of the new food, drug and cosmetic legislation.

On March 12, Dr. Mark V. Ziegler, Assistant Surgeon, U. S. Public Health Service, lectured on Opportunities in the United States Public Health Service.

On March 13, Dr. Halbert L. Dunn, Chief Vital Statistician, Census Bureau, Washington, D. C., lectured on Vital Statistics and Death Certificates.

On March 15, Dr. Arthur M. Shipley, Professor of Surgery, University of Maryland Medical School, Baltimore, held a clinic on "Traumatic Wounds of the Abdomen and Chest, and Suppurative Lesions of the Lung, Mediastinum, and Pericardium".

A grant was made by the Rockefeller Foundation to Duke University for one year in support of the investigation of the problems of physical chemistry by Dr. Hans Neurath, Assistant Professor of Biochemistry.

A Field Nutrition Study has been established at Duke University in cooperation with the Rockefeller Foundation and the State Board of Health. Sera coming from a survey area in a rural section are tested in the nutrition laboratory at Duke, and careful medical and dietetic studies are to be carried on in the field. The plan is to assess the nutrition status of small representative communities by use of all the procedures at present available, and in the light of the results obtained to broaden the program to include larger areas in the state.

NOTES FROM THE UNIVERSITY OF NORTH CAROLINA SCHOOL OF MEDICINE

The following members of the faculty attended the meeting of the American Federation of Biological Sciences in New Orleans the week of March 11-16.

Dr. Russell L. Holman, Associate Professor of Pathology, read a paper before the section on Pathology. The subject of his work is "The Influence of Nitrogen Retention Upon the Regeneration of Plasma Proteins".

Dr. H. Ward Ferrill, Associate Professor of Physiology, presented a paper before the American Physiological Society on "The Effect of Daily Insulin Administrations on Growth and Reproduction in Successive Generations of Rats".

Dr. James C. Andrews, and Dr. Granvil C. Kyker, of the Department of Biological Chemistry presented abstracts to the Biological Chemistry Section as follows:

Dr. Andrews: "The Optical Activity of Quinine in Various Solvents".

Dr. Kyker: "Determination of the Concentration of Quinine In Blood".

Thirty-seven students in the second-year class have been transferred to the following four-year schools.

University of Chicago: Rush, Southside; University of Cincinnati, Columbia University, Cornell University, George Washington University (Washington, D. C.), Harvard University, Johns Hopkins University, Jefferson Medical College, University of Louisville, University of Maryland, McGill University, New York University, Northwestern University, University of Pennsylvania, Temple University, University of Tennessee, Tulane University, Vanderbilt University, Washington University (St. Louis), Woman's Medical College of Pennsylvania.

NEWS NOTES FROM THE WAKE FOREST MEDICAL SCHOOL

Dr. Camillo Artom, Professor of Biochemistry, attended the Federation of American Societies for Experimental Biology and the American Society of Biological Chemists in New Orleans, March 14, 15, and 16. At the meeting he appeared on the program and reported recent research work done at Wake Forest on fats.

Drs. H. M. Vann and R. E. Miller attended the meeting of American Association of Anatomists at the University of Louisville on March 19, 20, and 21.

A new research grant of $2,500 has been awarded to the Department of Biochemistry by the Dazian Foundation for Medical Research.

"Doctors in Other Fields" by Dr. Thurman D. Kitchin, President and former Dean of the Medical School, has recently come from the press. This work is written in Dr. Kitchin's characteristic simple and human style, putting together in a single volume many facts of great interest relative to many eminent scholars who were also physicians. It was published by Southern Medicine and Surgery.

Arrangement has been made for a lantern slide demonstration of the new Hospital and Medical School buildings in Winston-Salem, at the Alumni Banquet to be held at the Carolina Hotel, in connection with the meeting of the Medical Society of the State of North Carolina in Pinehurst, on Tuesday, May 14. Dr. R. B. Wilkins of Durham is President of the Alumni Association.

NEWS NOTES FROM THE STATE BOARD OF HEALTH

The influenza epidemic that swept many sections of North Carolina took a toll of 224 lives in January, 1940, as compared with only 53 deaths from this cause reported in January, 1939.

There was also an increase in pneumonia deaths in January, the total having been 327, as compared with 315 the corresponding month a year ago; while deaths from pulmonary tuberculosis numbered 155, as compared with 146 the same month in 1939.

Deaths from preventable accidents also took an upward turn as 1940 got under way, the total for January having been 142, as compared with 119 a year ago.

There was an increase in both infant and maternal mortality. Deaths among children under a year old in January, 1940, totaled 453, as compared with 411 the corresponding month in 1939, sending the monthly rate up from 64.7 to 67.8. The number of maternal deaths this year in January was 33, against 30 the same month in 1939, making the rate for January, 1940, 4.9, compared with 4.7 a year ago.

The total number of deaths reported in January this year was 3,382, which was 554 in excess of the 2,828 reported in January, 1939. The number of babies born in North Carolina in January, 1940, was 6,680, as compared with 6,352 a year ago, an increase of 328.

Diphtheria deaths in January, 1940, totaled 27, an increase of 8 over the 19 reported for January, 1939, in spite of the State's new law requiring immunization of children between the ages of six months and a year and making immunization a condition for school enrollment.

Dr. Carl V. Reynolds, State Health Officer, has announced the receipt of a check for $200,000 from the Reynolds Foundation for the further prosecution of the anti-syphilis campaign in sixteen North Carolina counties and eight cities.

This amount, Dr. Reynolds pointed out, is an increase of $40,000 over the $160,000 allotted last year and double the original grant, which was $100,000.

Dr. Reynolds pointed out that this fund is being expended in only sixteen organized counties that have matched the Reynolds Fund for the control and eradication of syphilis. There are sixty other counties in the state which are receiving $158,000 from Federal funds made available through the passage of the Lafollette-Bulwinkle Bill. There are still twenty-four counties left which do not participate in either of these funds.

The State of North Carolina appropriates only $25,000, which is used to aid in central administration and the purchase of drugs.

A conference on school health education, called by Dr. Frank C. Foster, dean of education at the Asheville Normal and Teachers College, was held at Asheville in March. Dr. Carl V. Reynolds delivered a brief address on "The Need for Better Health Service in the Public Schools," and Dr. Walter Wilkins, Coordinator for the North Carolina School Health Service, spoke on "The Coordinated Health Program."

On March 25, Dr. Ernest A. Branch, director of the Oral Hygiene Division of the North Carolina State Board of Health, discussed "The Dental Program of the North Carolina Board of Health" before the Department of Public Health and Preventive Medicine of the University of Pennsylvania and the Philadelphia County Dental Society.

North Carolina Conference for Social Service

Meeting April 21-23, at the Robert E. Lee Hotel and Centenary Methodist Church in Winston-Salem

TENTATIVE PROGRAM

April 21—Sunday.

- Registration—4:00-6.00 p. m. (Registration at the hotel and the church throughout the Conference)
- 8:00 p. m.—Sermon—Dr. G. Ray Jordan—Centenary Methodist Church, Winston-Salem, N. C.

April 22—Monday.

- 9:00-10:45 a. m.—Meetings of the Affiliated Organizations.
- 11:00-12:45 a. m.—General conference.
  - a. Better Care of Mothers and Babies—Dr. G. M. Cooper.
  - b. North Carolina Clinics.
    - 1. Birth Control Clinics. Dr. Bayard Carter, Duke University.
    - 2. Diphtheria Clinics—Dr. Jay M. Arena, Duke University.
    - 3. Venereal Clinics—Dr. J. C. Knox.
- 1:00-2:15 p. m.—Luncheon.
  Subject—Diet.
- 2:45-4:45 p. m.—Selected Committee Reports
  - a. Rural Health—Dr. S. H. Hobbs, Jr.
  - b. Negro Health—Dr. N. C. Newbold, Dr. W. J. Hughes.
  - c. Mental Hygiene—Dr. Richard F. Richie.
  - d. Education—Integration of Public Schools with State Department of Health—Mrs. Rosa B. Parker.
- 6:15—Dinner.
  Social Program—Dr. Howard Rondthaler, Toastmaster.
- 8:00 p. m.—Vice-President, Dr. Bradway, presiding.
  - a. President's Statement (10 minute statement concerning the work of the Conference).
  - b. Address—Dr. Thomas Parran—Introduced by Governor Hoey.

April 23—Tuesday.

- 9:00-10:00—Committee reports.
  Resolutions—Dean M. T. Van Hecke, Chapel Hill
  Membership—Miss Chloris Kellum, Raleigh
  Nominating—Dr. W. C. Jackson, Greensboro.
- 10:00-12:30—Hospitalization and Medical Care.
  - a. What is adequate hospital and medical care and how is it being achieved in North Carolina?
    Dr. F. V. Altvater, Duke University.
  - b. Panel—How to Achieve Hospitalization and Medical Care for All Citizens.
    Dr. Fred Hanes, Presiding
    Dr. Hugh Cabot
    Dr. Wingate Johnson
    Dr. Haven Emerson.
- 1:00-2:30—Luncheon—Housing—Mr. T. S. Johnson, Presiding.
  Mr. Langdon Post, New York City, Housing Authority.
- 2:30—Business Meeting.

Mecklenburg Tuberculosis Sanatorium

A $35,000 addition to the Mecklenburg Tuberculosis Sanatorium in Huntersville is being constructed. The new building will be used for negro patients. According to the **Bulletin for the Mecklenburg County Medical Society** this will bring the expenditures for hospital construction in Mecklenburg County for 1940 to one and three quarter million dollars.

Buncombe County Medical Society

At the first March meeting of the Buncombe County Medical Society, held on March 4, the Medical Economics Committee presented the problem of medical insurance to the Society. At the second meeting, on March 18, Dr. Frank Howard Richardson gave a talk on "Marriage Counseling".

Forsyth and Guilford County Medical Societies

A joint dinner meeting of the Forsyth and Guilford County Medical Societies was held at the Robert E. Lee Hotel in Winston-Salem on March 20. Guest speaker of the evening was Dr. Walter C. Alvarez, Professor of Medicine at the University of Minnesota Medical School, and Senior Consultant in the Division of Medicine at the Mayo Clinic, Rochester, Minnesota. Dr. Alvarez spoke on "The Type of Patient Who Won't Get Well In Spite of Much Treatment."

Mecklenburg County Medical Society

The Mecklenburg County Medical Society resumed its regular bi-monthly meetings on March 26. Three papers were presented at that time. Dr. Graham Reid discussed "Medical Treatment of Massive Gastric Hemorrhage"; Dr. James Gibbon spoke on "Post-Operative Gastro-Jejunal Ulcers"; and Dr. W. S. Cornell discussed the "Selection of Patients with Gallbladder Disease for Surgery". Dr. Robert Thrift Ferguson, of Charlotte, has recently been elected president of the Society.

News Notes

At a recent meeting of the Southeastern Section of the American Urological Association, Dr. Hamilton McKay, of Charlotte, was elected a member of the Executive Committee of the American Urological Association, to represent the Southeastern States. Dr. McKay was also selected on the **Charlotte Observer's** All-American team for civic leadership in Charlotte during 1939.

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Dr. Paul H. Ringer, of Asheville, addressed the Augusta County Tuberculosis Society on March 28 at Augusta, Ga. His paper was on "Early Diagnosis".

* * * *

Dr. J. S. Brown, Sr., of Hendersonville, who has been a member of the State Society since 1894, did his 5,277th delivery on March 18. Looks like a record for a man in private practice.

According to a death certificate filed with Dr. R. T. Stimpson, Director of the State Board of Health's Division of Vital Statistics, Mary Parks, a negro woman, 112 years old, was found frozen to death at Roaring River, in Wilkes County. The year of her birth was given as 1828, and the death certificate was signed by I. M. Myers, Wilkes county coroner.

The value of Pyrethrum in Scabies is well established through the clinical work of Dr. S. E. Sweitzer. (Scabies, further observations on its treatment with Pyrethrum Ointment. Journal-Lancet, Sept. 1936, Vol. LVI. No. 9, p. 467) who used it on 1213 cases at the Minneapolis General Hospital. See advertisement, page 10.

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Annual meeting November 2, 1939. Mrs. John C. Tayloe, Councillor, Washington. Craven County—Mrs. R. S. McGeachy, president, New Bern; Mrs. Barker, secretary.

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Fifth District

Annual Meeting October 26, 1939. Mrs. W. T. Rainey, Councillor, Fayetteville. Hoke County—Mrs. G. C. Godwin, president, Sanatorium. Robeson County—Mrs. J. A. Martin, president, Lumberton; Mrs. E. R. Hardin, secretary, Lumberton.

Sixth District

Mrs. Ben Lawrence, Councillor, Hayes-Barton, Raleigh. Wake County—Mrs. James J. Combs, president, Raleigh. Person County — Mrs. John H. Merritt, president, Woodsdale.

Seventh District

Annual Meeting November 28, 1939. Mrs. Harry Winkler, Councillor, 2323 Westfield Road, Charlotte. Rutherford County—Mrs. W. C. Bostic, president, Forest City; Mrs. W. A. Elliott, secretary, Forest City; Mrs. M. G. Anders, treasurer, Gastonia; Mrs. F. M. Houser, *Hygeia* chairman, Cherryville. Cleveland County—Mrs. W. J. Lackey, president, Fallston; Mrs. B. B. Matthews, vice-president, Shelby; Mrs. Dwight Bridges, secretary-treasurer, Lattimore.

Eighth District

Annual Meeting first Thursday in March. Mrs. W. P. Knight, Councillor, 720 Summit Avenue, Greensboro. Guilford County—Mrs. A. D. Owenby, president, 2608 West Market Street, Greensboro; Mrs. W. L. Jackson, vice-president, 1100 Forest Hill, High Point; Mrs. A. K. Maness, treasurer, 18 Vine Street, High Point; Mrs. C. W. Durham, secretary, 2511 Berkley Pl., Greensboro; Mrs. E. T. Harrison, program chairman, Ferndale Drive, High Point; Mrs. R. M. Buie, McCain bed, Tabernacle Road, Greensboro; Mrs. J. A. Keiger, loan fund, 1025 N. Elm Street, Greensboro; Mrs. G. G. Perry, arrangement, 802 Chestnut Street, High Point; Mrs. T. M. Staunton, Greensboro; Mrs. J. T. Mann, *Hygeia*, 1206 Johnson Street, High Point; Mrs. J. E. Slate, membership, Greenway Drive, High Point; Mrs. T. D. Tyson, public relations, 1003 Club Drive, High Point; Mrs. Rigdon Dees, publicity, 305 S. Mendenhall Street, Greensboro; Mrs. J. W. Tankersley, membership, Meadowbrook

Terr., Greensboro. Forsyth County—Annual meeting December 12, 1939; Mrs. E. Bruce Brooks, president, 514 Reynolds Building, Winston-Salem; Mrs. Robert McMillan, president-elect, Winston-Salem; Mrs. Carlton Adams, secretary, Winston-Salem; Mrs. C. O. Tehaney, treasurer, Winston-Salem; Mrs. H. W. Goswick, membership, Winston-Salem. Rockingham County — Mrs. John Ray, Leaksville. Wilkes County—Annual meeting in March. Mrs. C. S. Sink, president, North Wilkesboro. Allegheny County—Mrs. G. T. Mitchell, vice-president, Wilkesboro; Mrs. J. H. McNeill, North Wilkesboro.

Ninth District

Mrs. James W. Vernon, Morganton. Caldwell County—Mrs. Ralph Lore, president, Lenoir; Mrs. A. B. Goodman, Sr., secretary, Lenoir; Mrs. Cloin Fetner, treasurer, Lenoir. Catawba County—Mrs. S. C. Nowell, Hickory; Mrs. H. H. Menzies, Hickory.

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BOOK REVIEWS

CARDIOVASCULAR-RENAL DISEASE. By Lawrence W. Smith, M. D., Professor of Pathology, Temple University School of Medicine; Edward Weiss, M. D., Professor of Clinical Medicine, Temple University School of Medicine; Walter I. Lillie, M. D., Professor of Ophthalmology, Temple University School of Medicine; Frank W. Konzelmann, M. D., Professor of Clinical Pathology, Temple University School of Medicine; and Edwin S. Gault, M. D., Associate Professor of Pathology, Temple University School of Medicine. Price $4.50. Pp. 227. New York: D. Appleton-Century Company, 1940.

This little volume can be recommended unreservedly to any doctor who wants to clarify his thinking about the most important problem that confronts the medical profession today. "According to the statistics of the Metropolitan Life Insurance Company every other individual in the United States past the age of fifty dies of cardiovascular-renal diseases." As stated under the title, the book is "A clinicopathologic correlation study emphasizing the importance of ophthalmoscopy", and it is an excellent example of the sort of cooperation that should exist between laboratory worker and clinician.

The study is divided into five parts: Hypertensive Cardiovascular-Renal Disease; Essential Hypertension (Nephrosclerosis); Senile Atherosclerosis (Arteriosclerosis); Nephritis; Nephrosis; and Clinicopathological Considerations. A very clear distinction is drawn between true hypertension associated with nephrosclerosis and that occurring as a terminal condition in arteriosclerosis.

As a loyal Tarheel this reviewer was disappointed in two omissions: Dr. William MacNider's important work on the kidney, especially his morphologic theory of immunity, and the notable contribution made by Dr. Boyd Harden in 1936 to the problem of eclampsia and pre-eclampsia.

After reading the book carefully, it is easy to understand why this study was awarded the Frank Billings Gold Medal at the 1938 meeting of the American Medical Association. Any practitioner will be well repaid for reading and re-reading it.

FRONTIER DOCTOR. By Urling C. Coe, M. D. Cloth. Price, $2.50. Pp. 264. New York: The Macmillan Company, 1939.

This is in reality "the story of one of America's last frontiers", and of one of America's last frontier doctors. During the six years that Dr. Coe practiced in the town of Farewell Bend, Oregon, and the surrounding 150 mile territory before the railroad came in 1911, he gathered enough material to fill these 264 pages with hair-raising episodes. It is no wonder that Dr. Coe dared not swap stories with any of the Eastern doctors for fear of being thought a liar. The experiences he had as a "team and wagon" doctor in that pioneer country are such stuff as Westerns are made of.

This book is written in a direct, unpolished narrative style which is well suited to its content. The author shows a knowledge of human nature in all its guises and an unembittered acceptance of its weaknesses. There is an occasional bit of philosophizing and one or two paragraphs in defense of the family doctor. Dr. Coe manages, as few men do, to write of his own experiences without seeming obnoxiously egocentric.

FRONTIER DOCTOR makes excellent recreational reading, whether for the layman or for the doctor.

A TEXTBOOK OF LABORATORY DIAGNOSIS. —Edwin E. Osgood, M. D., Associate Professor of Medicine and Head of the Division of Experimental Medicine, University of Oregon Medical School, Portland, Oregon. Ed. 3. Philadephia: The Blakiston Co. 1940.

The third edition of this book has been thoroughly revised and brought up to date and a considerable amount of new material has been added. The outstanding features of this book are many, the most important perhaps being the thorough discussion of the pathological physiology which is indicated by the results of laboratory tests. Interpretation of these tests, their reliability and accuracy and their significance in various types of disease are gone into with much more detail than in any other book on laboratory diagnosis that we have seen. This is of particular value to the practitioner, primarily not a laboratory man, who frequently does not appreciate the full value or the limitations of tests that he may order. The next most important feature is probably the Index by Diseases which consists of an alphabetical listing of diseases and under them, the various laboratory procedures which are of value in that disease.

The majority of laboratory texts are of minor importance outside the laboratory but this one is of equal value to the clinician and the laboratory worker.

LEGAL MEDICINE AND TOXICOLOGY.— Thomas A. Gonzales, M. D., Chief Medical Examiner of the City of New York; Morgan Vance, M. D., Deputy Chief Medical Examiner of the City of New York; and Milton Helpern, M. D., Assistant Medical Examiner of the City of New York. New York: D. Appleton-Century Company, Inc. 1940. $10.00.

This is a reprinting of the original work. To those who are acquainted with it further words are superfluous. It is probably the leading authoritative American textbook on the subject. It should be the constant companion of all coroners, coroner's physicians, medical examiners, toxicologists and pathologists. The book is based chiefly on the work being done in the Chief Medical Examiner's Office in New York City, and is an outgrowth of the experience of this office since it began operating in 1918. It is full of extremely important information to all those concerned with the investigation of deaths which have taken place under unusual or suspicious circumstances.

THE ESSENTIALS OF APPLIED MEDICAL LABORATORY TECHNIC. By D. M. Feder, M. D. Price $5.00. Pages 234. Charlotte Medical Press, 1940.

This is an excellent book for anyone who is starting a laboratory for the first time. It tells one just what materials are needed and where to get them, and quotes best prices. Techniques for almost every type of laboratory work are given, with many illustrations and drawings which are helpful and explanatory. This volume should make a good text book and prove very useful to the laboratory worker.

Each one of us, however old, is still an undergraduate in the school of experience. When a man thinks he has graduated he becomes a public menace. —The Papers and Speeches of John Chalmers DaCosta, Philadelphia, W. B. Saunders Co., 1931, p. 50.

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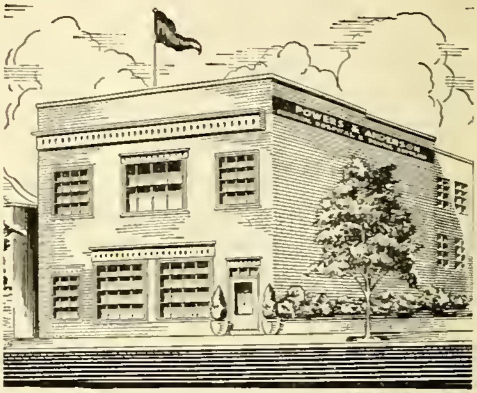

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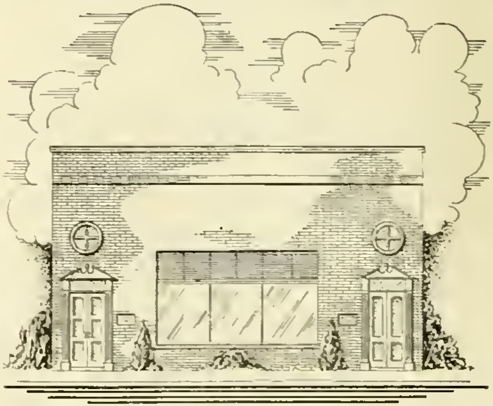

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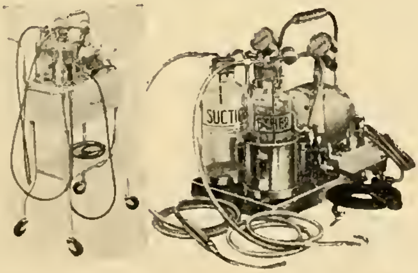

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VOL. 1 MAY, 1940 NO. 5

THE UNIVERSITY OF NORTH CAROLINA THE OLD MEDICAL SCHOOL

DR. RICHARD H. WHITEHEAD DR. CHARLES S. MANGUM

J. K. HALL, M. D.
RICHMOND, VIRGINIA

In whose mind arose first, do you suppose, the thought that the University should teach medicine, as well as other sciences and arts? It has been said that beginnings are seldom recorded. What a long time it was from the opening of the University of North Carolina in 1793 to the opening day of the School of Medicine in 1879! But the event that is to be has been forever on the way. Dr. Thomas W. Harris, who began the teaching of medicine here in 1879, was an academic graduate of the University in the class, perhaps, of 1859. He ranked high in scholastic standing. He obtained his degree in medicine from the University of New York, and he did graduate work for two or three years in Paris. His medical teaching at the University was of the preceptorial kind, which fitted students for matriculation in the large medical schools. Certain members of the University faculty gave instruction in those branches closely allied to medicine, but the medical school, if such it were called, did not become an integral part of the University during the days of Dr. Harris. He moved to Durham in 1885, giving up his teaching activities, and for five years the University was without facilities for instruction in the medical branches.

Then, in 1890, the School of Medicine was born again, as the University had been reborn in 1875. The medical division was fortunate in its new head, Dr. Richard Henry Whitehead, of Salisbury. There he had been born in 1865, about four months after President Jefferson Davis had passed through the town on his hurried journey to the south. Dr. R. H. Whitehead's background was valid and fortunate for him and for the state. Dr. Marcellus Whitehead, his father, Virginia born and educated, a graduate in 1845 of the Medical College of Virginia, had the reputation of being the best physician in western North Carolina. He carried on an extensive practice in Salisbury from 1845 to the time of his death in 1885. Yet he found time to serve as a member of the Building Commission of the State Hospital at Morganton. Dr. Marcellus Whitehead went back to Virginia in 1846, a year after he had settled in Salisbury, and brought back his bride, Miss Virginia Coleman, of Caroline County, daughter of Thomas Burbage Coleman.

It is not difficult for the student of heredity to believe that Richard H. Whitehead got by paternal transmission his love of science and from his mother's line his skill in teaching. His brother, John—elder by almost ten years—spent his professional life entirely in Salisbury. The late Dr. Isaac M. Taylor, of Morganton, a man of erudition himself, told me once that Dr. John Whitehead, whom he knew well, was the best physician in North Carolina, if not in the entire country. He was reputed to possess the same sort of innate and uncanny diagnostic acumen that had made his father famous as a practitioner. I met Dr. John Whitehead once or twice in consultation. Without apparent effort, and certainly without attempt at impressiveness, he instilled into the very atmosphere of the sick-room hope and peace and comfort. His movements about the sick one and amongst the anxious relatives constituted a benedic-

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Address delivered at the dedication of the new Medical and Public Health building at the University of North Carolina, Sesqui-Centennial celebration, December 4, 1939.

tion. Dr. John Whitehead lived until 1926.

Richard H. Whitehead, his younger brother, was said to have been studious and keenly observant even in childhood. His schooling was had in Salisbury under the Reverend Doctor F. J. Murdock, a scholarly Episcopal minister, who had the rare gift of being able both to teach and to inspire his students. After a year at the Horner Military School at Oxford young Richard Whitehead matriculated at Wake Forest College and was graduated as a Bachelor of Arts in 1886. He entered the Medical School of the University of Virginia in the fall of that year and completed the two years in medicine in one year. Dr. Towles, the famous teacher of anatomy there, was so impressed by the young man's capacity to concentrate and to learn that he induced him to come back to help in teaching for the next two years. In the fall of 1889 the young physician went to New York to fit himself by clinical experience for the surgical work in his brother John's busy practice. But—"the best laid plans o' mice and men. . ." What an immortal truth the Scotch lad's plow upturned on a rocky hillside on that cold winter's day!

The University of North Carolina was determined to resuscitate its medical school that had lain dormant for five years. Dr. Richard Henry Whitehead responded to the Macedonian call of the University for his help. In 1890 he became officially dean of the medical school and professor of anatomy. For the next six years Dr. Whitehead was, indeed, the medical school. The instruction during those infant years was limited to first year medicine. It must be remembered, however, that few, if any, schools fifty years ago had a medical curriculum that occupied four years.

But in the 'nineties the beginning of an awakening in various fields of activity was obvious. In the domain of medicine, for example, objects in the world of the invisible were becoming of more concern than the mightiest monsters. Tiny little plants, visible only by the help of a powerful microscope, were asserted by some of the new-thought medical men to be the causes of such deadly diseases as typhoid fever and consumption. The very idea must have seemed ridiculous to some of the older physicians. But, such notions necessitated the use of microscopes and places in which to use them—called laboratories

The credo of the new thought was: I can know. The word science means no more than that. Jesus had said long ago that it would be possible, and now His saying is engraved in Greek on the stones of a cornice at the University of Virginia, where Dr. Whitehead had been a student and a teacher. Ye—not may—but *shall* know the truth, it is written, and then there shall be freedom.

A mere youngster of twenty-five years had come to be the medical school of the state's University. But he was essentially much older. His days had been spent in a home in which his father and his brother were constantly engaged in struggles against mortal man's greatest enemies—disease and threatening death. Would not such kinship and such environment tend to develop and to bring to early maturity a thoughtful youngster?

Dr. Richard H. Whitehead was not of such somatic structure or of such manner as to cause one to ask: Who is he? He was neither large nor small; his hair and his mustache were light, his eyes hazel. He walked with a certain stoop; but he looked upon the world about him with those keen hazel eyes, and he thought of what he saw. He spoke with a voice a trifle nasal, quietly, genially with intimates, but always with a certain aloofness to others. He was a kindly, courteous, tolerant man, and modest, as well. He possessed none of the emotionalism that we associate with the South. He did not indulge in the cup, nor in raucous jest and speech, nor in glorification of the South's deathless history. He made use of the past, but only as a key and an aid to the development of an understanding of what is and of what may be. He inspired respect and admiration, but he did not invite familiarity. He was always level-headed, never emotional, and in his search after truth he was tireless and as exacting toward himself as toward his students. With the slow-going student he would be helpful and patient, but he would not credit him with qualities he did not possess, nor was he satisfied with work poorly done.

He was a scientist: patient, earnest, tireless, humble, honest, hopeful. He did not use language prodigally, but carefully and always purposefully. His lectures were always prepared. He knew always what he was going to say; he said it simply, plainly, accurately, without repetition. Even unintimate association with him was stimulating.

One felt that within him the fire of enthusiasm was always glowing. He kept himself and those about him on their intellectual toes. Until 1896 he was the medical school. Wherever he was there the school was—anatomy, physiology, materia medica. His hopes and his longings must have been many.

In 1896, in the person of Dr. Charles Staples Mangum, one—perhaps many—of those hopes came to him. He, too, not unlike Dr. Whitehead, came out of a home in which the thought had been not of self but always of others. His father, Adolphus Williamson Mangum, had become a member of the faculty of the reborn University in 1875, after many years of service as a minister. Dr. Mangum's mother, Laura Jane Overman, was a sister of Lee S. Overman, long a member of the United States Senate from North Carolina.

At the age of five years Dr. Mangum came in 1875 with his parents to the University, and with it he lived continuously, save when a medical student in the North, until his death on September 29, 1939. He was an academic graduate of the University in 1891, and a student in the medical school under Dr. Whitehead in 1891-92, during which period he was also athletic director of the University. In 1894 he was graduated from Jefferson Medical College high up in a large class. He won the coveted Therapeutics Prize. For a year he gave himself over to practice in the coal fields of Pennsylvania. Then he was called back to Jefferson as a demonstrator of anatomy. Dr. Hobart A. Hare, Jefferson's well-known professor of materia medica, longed for Dr. Mangum as his assistant, for each was after the other's heart. Dr. Mangum must have experienced pain in declining the call to Jefferson.

But the University of North Carolina had been his home since his fifth year, many of his people were there, and Dr. Whitehead, who had taught him, was there, too, and was calling him to come back to help him make the medical school larger and better. And in 1896, Dr. Mangum came to the school as professor of physiology and of materia medica. The school then became a two-year school. We should bow our heads in thankfulness to God for directing to this University Dr. R. H. Whitehead and six years later Dr. C. S. Mangum. Their coming meant the beginning of medical education in North Carolina. I pray that medical education shall be continued here until time shall have become only a memory.

A year after Dr. Mangum came to the medical faculty I came to the academic freshman class in 1897—an event infinitely less momentous. I shall not forget my first sight of Dr. Mangum. Of course we called him Charlie, just as we called Dr. Whitehead, not Dick, but Old Dick. Why? I wonder—because Dick was little older than some of his students.There were those qualities about Dick that seemed to dissociate him from youth, certainly from familiarities; but I would not have you think of Dr. Whitehead as cold and repellant. He was, in fact, a cordial, approachable man, generous in giving himself to others. Still there was always a touch of reserve about him.

Charlie was one of the most appealing figures I have ever known. He was physically handsome; there was a lightness about his movements and a grace about his carriage, and there was about him the radiation of vitality and of joyousness such as I have observed in no other mortal. It was a privilege merely to look upon his enjoyment of life. He went about the village and on the campus and in classrooms and in homes in glad communion with all—blacks and whites, old and young, students and faculty members. He carried himself erect, with so little apparent effort that his transmutation of energy into action constituted a high art of which he was wholly unconscious. He had a clear-cut countenance, a face suggestive of a living cameo; a vibrant, cheery, musical voice, that carried always gladness and hope. Dr. Mangum touched every phase of University life. He was the son of a professor who lived until 1890, when Dr. Mangum was twenty years of age. He knew all in the village. He was musical, with his voice and with the guitar.

He mingled freely with faculty members and with students. I have long felt that he did more than any other to bridge across that chasm betwixt students and teachers that was in the olden days so deep and so impassable. But if it existed for Charlie it did not block his passage, for he skimmed along blithely from student group to faculty meetings, as easily a member of the one group as of the other. So doing, he performed a splendid service in democratizing and humanizing university life.

I was his student. I have never known a

better teacher. He had a quickly perceiving mind; he possessed skill, verbal and other kinds, in imparting his own knowledge to his students; and he aroused them to their best efforts. His familiarity with them, and theirs with him, did not prevent him from giving them what he thought they deserved for laziness and for imperfect work. His attitude towards students was more sympathetic than Dr. Whitehead's.

Dr. Whitehead resuscitated a dead medical school. He came near to making the school out of nothing save out of himself. Would it not sound blasphemous I might say he did that. Did not Dr. Mangum create the second year of the school? I should say so. And Charlie, in addition, caused to be created or assembled here, during his deanship, the Division of Public Health. I suppose both schools so intermingle their activities that one cannot be entirely differentiated from the other.

I thank God for them and for all of you, who are giving your lives daily to God, transmuting yourselves in helpfulness to your fellow-mortals. Your behavior is in commendable contrast to that of so many of the world's scientists and so-called patriots of today.

Dr. Whitehead came to the University in 1890. In 1891 he was married to Miss Virgilia Whitehead of Virginia. He and she were both grandchildren of John Whitehead, of Nelson County, Virginia. In 1905, Dr. Whitehead was called to the deanship of the Medical School and to the chair of anatomy at the University of Virginia. He had occupied those positions in this University throughout the fifteen years that he was a member of this faculty. He accepted the call to Virginia. And there in 1916, at the too-early age of fifty-one, he died.

Dr. Mangum was married in Washington City to Miss Laura Payne. Her father was an army officer. She, too, understood the art of unselfish devotion to a cause. Mrs. Mangum is the niece of my beloved old Greek teacher, Dr. Eben Alexander, whose son of the same name is a distinguished surgeon in Knoxville. Mrs. Mangum is descended directly from General James White, of my native Iredell, who went west soon after the Revolution and became the founder of Knoxville, and the progenitor of many of the best people of Tennessee and other states. I hope that Mrs. Mangum and her scholarly son may abide here.

I have not spoken of the old dissecting hall of my day, of its barrenness, of its uncomfortableness and its bleakness, nor of Bill Jones's failure, generally, to have the stove heated even on the coldest morning. What matters it? Where Dick and Charlie were there the medical school was. The mightiest sermon was preached on a barren hilltop; the most impressive teaching was done as Socrates strolled about over the Greek peninsula.

I look upon the New Medical Building with pride and satisfaction and with gratitude. But you, students and teachers, I look upon as the spirit of the medical school. Such as you constitute the basis of the hope of a mad world. May God keep you in strength and in courage.

REGIONAL ILEITIS

With Case Report

T. C. Bost, M.D., F.A.C.S.

Charlotte

Crohn, Ginzburg and Oppenheimer(1) in 1932 described a disease entity which they called regional ileitis. They brilliantly isolated this disease from a previously confused group of benign inflammatory lesions of the intestine. To this original description little has been added besides confirmatory clinical and pathologic observation.

Regional ileitis is comparatively rare, but since Crohn's classical description of this disease eight years ago an occasional case report has been made from various centers. It would appear, however, that this is not in reality a new disease, as Abercrombie of Edinburgh described a similar lesion in 1828. Proust(2) in 1907, and Brown(3) in 1909 called attention to nonspecific inflammatory tumors of the intestine, and many similar reports have been made since. This disease has been called regional ileitis, terminal ileitis, sclerosing enteritis, nonspecific inflammatory tumor, and nonspecific granuloma of the intestinal tract. The terminal ileum is most

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Read by title before the Section on Surgery of the Medical Society of the State of North Carolina, Bermuda Cruise, May 13, 1939.

1. Crohn, B. B.: Ginzburg, Leon; and Oppenheimer, G. D.: Regional Ileitis a Pathologic and Clinical Entity, J. A. M. A. 99:1323-1329 (Oct. 15) 1932.
2. Proust, in Bull. et mem. soc. de chir. de Paris 33:1158, 1907.
3. Brown, in Deutsche. Ztschr, f. Chir. 100:1, 1909.

frequently the site of the lesion, but no portion of the intestinal tract can be said to be immune to it.

Pathologically, the condition is one of proliferation of the hematopoietic cells and proliferation and irritation of the somatic cells of the intestinal wall. Later there is ulceration with fibrosis, narrowing of the intestinal lumen, and a tendency toward perforation and fistula formation.

The etiology of this apparently definite clinical entity is obscure. The disease occurs predominantly in young adults, and is at least twice as frequent in males as in females. The clinical picture of a typical case resembles closely that of chronic, nonspecific, ulcerative colitis. However, the clinical course runs in four stages: (1) Acute peritoneal irritation, when the disease resembles acute appendicitis; (2) symptoms of acute ulcerative colitis with ulcerative enteritis and colicky pain, fever, tenderness, diarrhea, anemia and marked loss of weight; (3) stenotic stage with symptoms of chronic obstruction of the small bowel with a palpable mass present within the abdomen; (4) fistula formation. Fistulae often follow drainage for supposed appendiceal abscesses.

In the early stages it is impossible before operation to distinguish regional ileitis from acute appendicitis. In half of the cases reported by Crohn the appendix had been removed at a previous operation.

The onset may be sudden, with abdominal pain and diarrhea, which are not particularly severe and which tend to recur. The dull cramp-like pain may involve all the lower part of the abdomen, but is commonly localized in the right lower quadrant. Weakness, progressive loss of weight and a moderate degree of anemia are significant symptoms. The stools contain mucus, pus and streaks of blood. The white blood count, as a rule, is normal or slightly elevated. The physical signs are the presence of a moderate-sized, firm, tender mass in the right lower quadrant, and of fistulae, emaciation, anemia and signs of intestinal obstruction.

X-ray examination by the technique of Kantor[4] is the most important means of establishing the diagnosis. A helpful sign is the "string sign" (fig. 1), a thin, slightly irregular linear shadow suggesting a cotton string in appearance, which extends from the region of the last visualized loop of ileum through the entire extent of the filling defect and ends at the ileocecal valve.

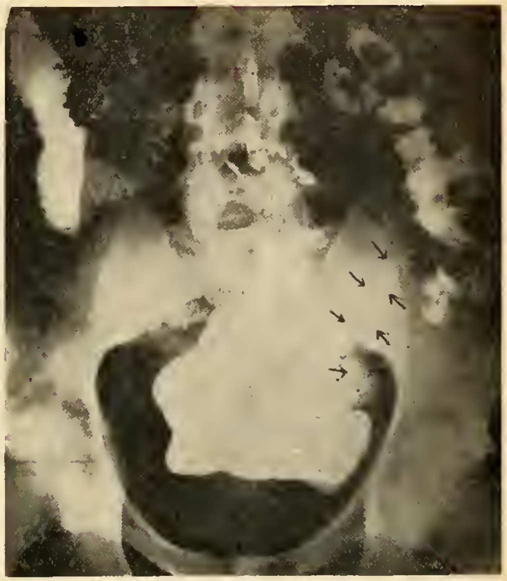

Fig. 1. Arrows point to "string sign."

The treatment of regional enteritis varies with the phase of the pathological process. When the disease is limited to the bowel and not associated with thickening of the mesentery it may resolve spontaneously. If, however, the mesentery is thickened and indurated, it is probable that ulceration of the mucosa has extended into the mesentery; spontaneous resolution then is less likely to occur, and a short-circuiting operation or a resection is indicated. Chronic regional ileitis with stenosis is best treated by resection or by a short-circuiting operation. When resection is necessary, it is perhaps best done in two stages. The first stage consists of dividing the ileum well above the diseased area, closing the distal end and anastomosing the proximal end to the transverse colon. The division of the bowel is said to prevent the further spread of the disease. However, Shearer and Jackson[5] reported a case in which they resected the ileum and the disease recurred twice, making two additional resections of the lower ileum necessary. The second stage consists of a resection of the diseased bowel and thickened mesentery, when this is necessary. When there is an external intestinal fistula, resection of the involved bowel with the fistulous tract is necessary to close the fistula.

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[4] Kantor, J. L.: Regional (Terminal) Ileitis: Its Roentgen Diagnosis, J. A. M. A. 103:2016-2021 (Dec. 29) 1934.

[5] Shearer, J. P. and Jackson, J. T.: Recurrent Regional (Terminal) Ileitis, Ann. Surg. 106:459-461 (Sept.) 1937.

Case Report

J. C. D., a young man aged nineteen years, began in January, 1936, to have slight pain in the lower right side of the abdomen and was slightly nauseated but did not vomit. The attacks gradually grew worse and he was operated on for appendicitis at Mercy Hospital in March, 1936. The postoperative diagnosis was subacute appendicitis and mesenteric adenitis.

Following this operation he did not have any attacks for about a month. After this attacks recurred and gradually became more and more severe and more frequent. The attacks would recur about once a week, and were cramp-like in character. With these attacks he was nauseated and vomited. For a month before examination attacks were almost continuous, and he was able to eat very little because of pain and nausea. He gradually lost about 20 pounds in weight, and weighed 115 pounds at examination. He did not have diarrhea.

Family history was essentially negative. Past history was also negative. The patient had been well until January, 1936, when his first symptoms of abdominal cramps and nausea began. He was admitted to Mercy Hospital again on November 19, 1936.

Examination: The patient was slender and under weight. The head, neck, heart and lungs presented no abnormality. The abdomen was slightly distended and there was the scar of a McBurney incision. There was slight tenderness and rigidity over the lower right side, where an irregular glandular mass was palpated. It was firm but not hard, and was tender and slightly movable. There was no tenderness or masses elsewhere.

Rectal examination was negative. No examination of feces was made.

The urine was normal. Wassermann reaction was negative; hemoglobin was 80 per cent, red blood cells 4,100,000, and white blood cells 8,000; differential count was normal. Blood pressure was 120/80.

X-ray: The stomach was normal in size, shape and position, and its wall outlines were smooth. Peristalsis was normal. The duodenum was visualized and was freely movable, and the cap was normal.

The examination after three hours showed a small residue of the barium meal in the stomach and jejunum, and the coils of the ileum well filled, except for the terminal eight or ten inches, which presented a stringy, spastic appearance (fig. 1). Palpation over this area elicited tenderness. The head of the barium column at this time was filling into the cecum.

Examination after five hours showed the head of the barium column in the descending colon and the proximal colon well filled, with a small residue in the terminal coils of the ileum; the deformity of the terminal ileum referred to above was less marked.

The twenty-four hour examination showed a moderate residue of the barium meal scattered throughout the distal half of the colon.

Impression: Filling defect in the terminal coil of the ileum, cause undetermined.

Operation: On November 20, 1936, under general ether anesthesia the abdomen was opened by a right rectus incision. A sausage-shaped mass about ten or twelve inches in length presented, which was very much thickened and indurated and which proved to be the terminal ileum. The process ended abruptly at the ileocecal junction and gradually faded above into normal ileum, except that there was moderate dilation of the ileum above the diseased area. The mesentery along the diseased segment was thickened and indurated and contained many large lymph nodes.

An ileocolostomy was done, with division of the ileum about two feet from the ileocecal junction. The distal end of the ileum was closed and the proximal end was anastomosed end to side, to the colon. A mesenteric gland was removed for examination. (Pathologic report of gland, benign lymphocytic hyperplasia.) The patient reacted well and made an uneventful recovery. Three or four days after operation he was able to take nourishment for the first time in six months without pain. There was primary union of the incision and the patient was dismissed from the hospital in two weeks. He improved rapidly and the palpable mass gradually disappeared, and was completely gone two months after the operation.

Note. This man was last seen and examined in April, 1939, two years and five months after operation. He appeared to be in a normal condition, and weighed 148 pounds—a gain of 33 pounds. He had no tenderness or pain in his abdomen and stated that he could eat anything he wanted.

X-ray. The contrast media passed readily into the colon without evidence of obstruction or undue discomfort. As the head of the barium column reached the mid-transverse colon it divided, a portion entering the small bowel at the seat of an anastomosis, and the other portion passing on into the cecum. The cecum and flexures were freely movable.

Comment

The good recovery that this patient made, and the good results reported in other cases following ileocolostomy would seem to indicate that this is the operation of choice. Most of the reported cases that have not done well following ileocolostomy appear to be those in which the anastomoses were done without severing the ileum. In these cases the fecal current was not all diverted, and could continue to pass through the diseased intestine. It seems wise to do an ileocolostomy with division of the ileum at the primary operation, reserving resection of the diseased intestine for a second operation in the cases not cured by the first, rather than to do a resection at first as has been advocated by some. Resection is simpler at the second operation because there is already a functioning anastomosis and the patient's general condition should have been improved in the meantime. These factors should lower the mortality.

Conclusion

1. Regional ileitis, or Crohn's disease, appears to be a well defined clinical entity with obscure etiology and with a characteristic pathologic picture.

2. The case here cited is reasonably typical of the disease, and the patient was cured following an ileocolostomy with the division of the ileum.

The Experimental Method. — The experimental method, insisted on by Claude Bernard and now used in the teaching of science and which should be used to understand all relationships in which life is concerned, only commences in the laboratory. Its medical use reaches its height when employed by physicians not only in hospitals but also in homes of such wealth that they have become pathological and in the quiet, kindly cottages and huts which need light from an experimentally minded and inquisitive physician.—Macnider, Wm. deB.: The Biologically Minded Physician, Science, 86:109-114 (Aug. 6) 1937.

TEAM PLAY FOR HEALTH

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Man must make a concerted, scientific endeavor to stamp out the high cost of disease. Lack of cooperation and complete understanding between physician, public health officer, and layman has resulted in wasteful expenditure of huge sums, running into the millions. Sporadic and half-hearted measures in prevention and control are but partially productive of significant results. History is replete with occasional determined attempts to ward off impending epidemic disaster, followed by complacent return to indifference after the emergency has passed. Concerted and prolonged attack upon preventable illness and premature death is too frequently the exception instead of the rule. Even though we are indifferent to individual and social results of disease, we are compelled by our interest in economy to speed up, consolidate, and promote the combat against lingering ailments which shackle man to poor health, misery, and financial loss. Mounting costs for the care of those suffering the end results of such disease as tuberculosis demand a speeding up of preventive measures and their more universal application to all groups of our population, especially to those most intimately exposed to the high speed and mechanical innovations of modern industrial life.

Progress in the control of preventable diseases is dependent largely upon the sane manner in which the laity receives, assimilates, and utilizes health knowledge. Every city and rural area is as healthy as the people who live therein. Public health is but a summation of personal health. It reflects the health consciousness of the people of the community. That great pioneer health administrator of New York, Herman Biggs, proclaimed with reason that it is within the power of mankind to determine his own death rate; that within reasonable bounds any community can determine the rate at which its citizens shall die. During the past several decades research and advance in medical science have increasingly disclosed new information, the application of which

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will improve the health and add to the fulness and wholesomeness of our existence. The majority of us are resistant to any outside influence which tends to change our behavior—be it a matter of politics, religion, or health habits. It requires the slow prodding influence of education through the years to show us how we may live more sensible lives. Unquestionably, the trend is in the right direction. There is evidence of a willingness to accept the dictates of the scientists and to speed up individual and public health conservation. There is, however, too much lay lethargy and too little participation by the family physician in extending the usefulness of health knowledge. More general acceptance and more universal application of preventive procedures will save enormous sums now expended in health education. The problem calls for a greater participation on the part of physicians and dentists in making more generally available the techniques of prevention, and for a more willing response on the part of the public to accept these services which are designed and intended to protect the health of all.

Too frequently we are lulled into a false sense of security. We feel that the problem of tuberculosis has been solved or we assume that the public health officer and the tuberculosis society have the situation well in hand. While it is true that the death rate from tuberculosis is but one-fifth of what it was one hundred years ago and but one-third of the rate at the turn of the century, this disease still remains an important cause of death. In early childhood, it is the cause of three times the number of deaths occasioned by all the communicable diseases added together (including diphtheria, scarlet fever, measles, whooping cough, and the dread infantile paralysis). Tuberculosis from twenty to forty years ranks first among the causes of death. There is still need to keep up the fight against the bacillus.

We must include in our fight against tuberculosis all phases of the *span* of community health service. The word SPAN is used advisedly. In this day of alphabetical projects, in this era of hours devoted to anagrams and the solution of cross-word puzzles, it seems appropriate to use a simple word, every letter of which is significant. I am not proposing that my four-letter word *span* will go down through the ages like the writings of the great philosophers, Socrates, Plato, and Aristotle, but I do hope that long after you have forgotten this paper you will remember that to fulfill your program of community health service you must complete the *span*. The S suggests that our preventive programs must be built on a foundation of reliable *statistics*. Fortunately, we do not play with hypothetical conjectures of cause and effect. Learned philosophical discussions are quite out of order. Scientific medicine gives us proven facts. In the case of tuberculosis we have been able to isolate the causative organism. With the aid of the microscope we can see the tubercle bacillus; we know his habits, his mode of life and his relation to the sex, age, color, and occupation of man. We know that tuberculosis is a dangerous communicable disease, spread from individual to individual—largely a family or household disease. With this knowledge we can forge ahead and develop a program of protection.

The next important feature of the health span is the *preparation* of the various groups which are to participate. There is urgent need of pooling resources, of liberating the potentialities of every professional and educational group and focusing these upon the dissemination of health knowledge in terms so simple that every layman may understand. Again, in the case of tuberculosis, we no longer rely upon clinical symptoms and evidence demonstrable by a stethoscope. We know that such an implement does not discover the early case of tuberculosis. We must use the tuberculin test and an x-ray examination of all positive reactors, and especially of those who have been intimately exposed to tuberculosis or who reside in areas of high mortality, or who are employed in certain danger zones of industry. We must be certain that the public will secure the type of service to which it is entitled—not the obsolete examination of the vintage of 1890.

Important is the integration into our program of those professional and educational groups which remain relatively dormant unless activated by some zealous health officer or medical society officer. There are some 140,000 physicians and 90,000 dentists in the United States who, by training and experience, are qualified and willing to contribute materially to an expansion of the community health facilities. Every physician in this great state should become in fact a sort of deputized health commissioner, should practice preventive as well as curative medicine, should speed up the diagnosis of abnormalities which, if neglected, lead to physical and mental handicaps, retarding the normal growth and development of children and weighing so heavily upon people at every age. There is no suggestion that the family physician serve as a substitute for the health officer. Quite the contrary. It is suggested that they team together and thus add to the effectiveness, availability, and usefulness of the preventive program. This can be accomplished with advantage to the public, community, the health department, and the physician. No one gains by delay in the diagnosis of incipient disease. Surely, there is no advantage to the patient who finds that tuberculosis has already advanced to a stage where the deribbing operation is necessary to close his cavity from which the dangerous tubercle bacilli are being expelled. Surely, there is no advantage to the public which each year is confronted with an increasing cost of hospital care, family, and social relief for the victims of disease. No, I presume the only one who would be disappointed is the undertaker—and he will catch 100 per cent of us eventually.

In this matter of *preparation*, frankness demands a note of caution. By and large, all physicians have been trained to look upon sick individuals and not sick communities. They are wont to overlook the causes which may have contributed to a particular case of tuberculosis. Since it is a communicable disease, the disclosure of a new case demands a search for the sick lung from which the bacilli have been poured forth like spit bombs to spread infection in the household, the school, or the community. The health-minded family physician must go deeper into the problem than the mere examination of the patient who stands before him in his examining room. Furthermore, the layman is unable to discern the physician qualified to practice the modern techniques of preventive diagnosis. All of this necessitates careful preparation of the physician through training in medical schools, through post-graduate conference for those already in practice, and through some system of coordination or professional relationship with those who are not accustomed to attend medical meetings and who may not even belong to an organized medical or hospital group. It would be foolhardy to teach the public to seek a diagnosis until there is every assurance that the rank and file of physicians are qualified to serve in their new capacity as deputized health commissioners.

The major part of the *preparation* program remains unfulfilled. After all, the public health man and the family physician can do nothing without the friendly and conscientious cooperation of the layman. If we are fighting diphtheria, our education program must reach the parents of children of susceptible age. These guardians of the health of youth must be convinced that diphtheria is a preventable disease and that the means of protection are readily available.

The public must be taught that the tools for finding early tuberculosis are the tuberculin test and the x-ray examination of the chest. In the expansion of the health education program we must not overlook the educators, the school teachers, superintendents, and members of the board of education, the newspaper editors, the clergyman, the veterinarian who examines the meat we consume and protects our pets against the ravages of rabies, the school engineer—that supervisor of the light, ventilation and environmental sanitation to which the young are daily exposed—all of these groups have an interest in certain phases of health service. Efficiency and economy demand a correlated program of health interest.

There yet remains the completion of our *span*. The A and the N are as significant as the S and the P with which we began. Having interested the physician and layman, our problem resolves itself immediately into the development of a service which will be *available* to all alike *notwithstanding* the financial condition of the family. You now have, therefore, the secret of the *span*—*a* stands for *availability*—*n* for *notwithstanding*. Now our word is complete. Of course the method of completion may vary with the locality, but that the job should be complete is axiomatic. There is no need of telling the parent that all the children of the household should have a tuberculin test or an x-ray examination unless it is made economically possible for the service to be secured. Local ingenuity will vary the method by which this service is provided. Many of us feel that the most efficient and effective method of accomplishment is by including the family physician in the program. Public opinion, I feel sure, demands that the physician receive some compensation for services rendered. If the family, because of financial embarrassment, is unable to meet the cost, a modest subvention from public funds should be provided for the indigent or near-indigent case. There is evidence to show that intelligent people appreciate the value of preventive medicine and realize that such service is as essential to the health and well-being of the household as food, fuel, shelter, or any other necessity of life. Society must provide such essentials when the family exchequer is small or depleted.

In one of the large mid-western industrial cities an intensive effort has been made during the past year to speed up the finding of the early case of tuberculosis in districts of high mortality, and especially among those families where there has occurred a recent case or death from this disease. Already 125,000 persons of all ages have visited the office of a family physician; more than one-fourth of these persons have had a positive tuberculin test; nearly eight out of ten of this latter group have submitted to an x-ray examination of the chest and there have been found some 600 additional new cases of tuberculosis, of which approximately one-third have tuberculosis in an early stage, and but a few in the advanced stage. Eighty per cent of these cases have been hospitalized or isolated under proper hygienic conditions. The saving in hospital bills made possible by finding early cases—for the average period of hospitalization for the early case is but one-half that of the advanced case—has already paid for the added cost of health education and diagnostic service. From now on dividends will be paid not only in better health for the family but in savings in the city's health budget. Here the *span* of community health service has been completed through the teamwork of layman, physician, and health officer. No city or county can afford to neglect this opportunity to save money. We cannot afford to pay the high cost of unnecessary illness. Tuberculosis and other preventable diseases are still with us. The rapidity with which these causes of illness and premature death tend to disappear will depend upon the seriousness with which we attack the problem. We visualize the family physician, not necessarily as a tuberculosis expert, but as a very potent factor in discovering early tuberculosis—a G-man in the line of attack. It is he who, by and large, sees the first departures from normal health. Tuberculosis is still a very human problem. It is a people's disease; the fight is the people's fight against a people's plague. From the viewpoint of the biologist, man must move faster in his preventive service than the tubercle bacillus moves in scattering his kind among our susceptible families.

THE DIAGNOSIS AND MANAGEMENT OF EARLY INFECTIOUS SYPHILIS

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and

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The diagnosis of early syphilis is purely *laboratory*(1 2). The use of the term "early syphilis" in this discussion is meant to describe infectious syphilis in the primary or the secondary stage. The detailed clinical, morphological, and histological characteristics of lesions of primary and secondary syphilis will not be discussed in this paper, because we want to emphasize the necessity for the laboratory diagnosis of early infectious syphilis. General clinical characteristics of the typical chancre should be familiar to every physician, but, as is well known, these criteria do not always hold true. It has been shown on many occasions that, although as a rule the primary lesion is single, there sometimes may be as many as a dozen chancres in a single patient. This exception from the general rule appears also in other so-called characteristics of the chancre. Since the introduction of the dark field microscope and serological tests, clinical criteria so necessary before the advent of these diagnostic measures have lessened in importance.

Moore(3 4) has outlined six diagnostic max-

From the Section of Dermatology and Syphilology of the Department of Medicine, Duke Hospital, and the North Carolina State Board of Health.

1. Stokes, J. H.: Modern Clinical Syphilology, Philadelphia, W. B. Saunders Co., 1934.
2. Moore, J. E.: The Modern Treatment of Syphilis, Springfield, Ill., Charles C. Thomas Co., 1933.
3. Moore, J. E.: The Diagnosis of Syphilis by the General Practitioner, Ven. Dis. Inform., Supplement 5.
4. Moore, J. E. et al: The Management of Syphilis by the General Practitioner, Ven. Dis. Inform., Supplement 6.

ims for use in the diagnosis of primary syphilis, which are listed below:

1. Any genital lesion in male or female is possibly primary syphilis until proved otherwise.
2. Any indolent lesion anywhere on the body (especially on the lips, tonsils, fingers) which fails to heal in two weeks may be primary syphilis.
3. The diagnosis of primary syphilis is a laboratory and not a clinical procedure.
4. Do not treat suspected primary syphilis locally until repeated dark field examinations are negative.
5. Do not give anti-syphilitic treatment on suspicion. Prove the diagnosis.
6. There is need for urgent haste in diagnosis. Hours count.

A great number of genital and extra-genital lesions may resemble primary syphilis. Some of the most common and most characteristic lesions will be listed below:

Genital

- Chancroid
- Secondary syphilis
- Infectious relapse
- Herpes progenitalis
- Lymphogranuloma inguinale, (Lymphogranuloma venereum)
- Lymphopathia venereum
- Gonorrhea
- Balanitis gangrenosa
- Scabies
- Venereal warts
- Tertiary syphilis
- Granuloma inguinale
- Traumatic lesions
- Pyogenic lesions
- Epithelioma
- Tuberculosis

Extra-genital

- Herpes
- Traumatic lesions
- Sporotrichosis
- Tularemia
- Pyogenic lesions
- Tuberculosis
- Epithelioma

The diagnosis of early syphilis is established by a systematic investigation as detailed below:

1. Dark field examination of surface serum. If dark field examination is negative, repeat on three consecutive days before any local therapy is used.
2. If dark field examination of surface serum is negative, do a dark field examination of aspirated serum from the base of the lesion.
3. If this is negative do a dark field examination of material aspirated from a satellite lymph node.
4. If sufficient serum is available send serum to laboratory for local serological studies.
5. Do serological tests at first visit. If positive, begin treatment at once with an arsenical.
6. If all tests are negative, do serological tests at weekly intervals for the first month, and twice monthly until a three months' serological follow-up study has been carried out.

In addition to these investigations the Frei tests and the intradermal chancroidal antigen test should be used routinely. In resistant lesions which do not respond to treatment, biopsy should be performed to rule out specific granulomas and other entities.

The diagnosis of secondary syphilis is again a laboratory procedure. Cutaneous manifestations of secondary syphilis may be so slight and evanescent that they may be completely overlooked by the patient and physician. Fortunately, however, the serological test is always positive in secondary syphilis. Certain maxims such as were applied to the establishment of the diagnosis of primary syphilis may be used in secondary syphilis as well:

1. Blood serological follow-up on suspected primary lesion.
2. Blood serological studies on any generalized skin eruption.
3. Blood serological studies on sore lips, sore throats, or other conditions of a similar nature which persist for more than ten days.
4. Blood serological tests on patients with general malaise, headaches, vague bone and joint pains.
5. Blood serological tests on unexplained patchy loss of hair.
6. Blood serological studies on all patients with iritis.
7. Blood serological studies on all patients presenting a generalized lymphadenopathy.

The cutaneous manifestations of secondary syphilis are so varied that to give a list of conditions simulating it would be to include most of the skin diseases known to mankind. Generally speaking, it may be said that if the lesions are vesicular or bullous they do not represent acquired early syphilis. However, a list of the more common skin diseases which may be confused with secondary syphilis follows:

Pityriasis rosea
Toxic erythema
Dermatitis medicamentosa
Erythema multiforme
Urticaria
Psoriasis
Seborrheic eczema
Tinea versicolor

It must be remembered that many times the only visible lesions of secondary syphilis appear on the mucous membranes. Below are listed some of the mucous membrane lesions which may resemble syphilis:

Herpes simplex
Vincent's angina (Fuso-spirochetal infections)
Aphthous ulcers
Streptococci sore throats

Iritis, alopecia areata, vague bone and joint pains all demand explanation and serological study.

The public health aspect is most important, and case finding and follow-up work play an important part in the syphilis control program. It should be determined if possible from whom the patient acquired syphilis and to whom he may have transmitted the disease. All contacts either before or after the patient has acquired syphilis should be examined clinically and by serological study.

Once the diagnosis of early infectious syphilis has been made, in either the primary or secondary stage, treatment is essentially the same. It is important always to begin treatment with an arsenical, as the disease is infectious and constitutes a public health problem in this stage. The necessity for early diagnosis and early treatment can be emphasized by the fact that the probability of cure is more than 18 per cent better in sero-negative primary syphilis than in sero-positive primary syphilis, and 21 per cent better than when the disease is discovered in the secondary stage. Neoarsphenamine and bismuth subsalicylate are suggested in the treatment schedule that we will outline. We recognize, of course, the superiority of arsphenamine in certain individual cases and we realize that the use of mapharsen must be considered in certain patients who react unfavorably to neoarsphenamine; but the reason for the selection of neoarsphenamine and bismuth subsalicylate is that they are well-tried and proven drugs whose everyday use is more familiar to the majority of practicing physicians. We recommend that the spinal fluid examination be performed between the sixth and twelfth month if no signs of central nervous system syphilis develop in the meantime. If signs of meningeal irritation or other signs of central nervous system syphilis develop, spinal fluid examination should of course be done immediately. The schedule for treatment is a modification of that advocated by the clinical cooperative group, and is tabulated below.

It is recognized by the authors that there are other treatment systems, including the Pennsylvania concurrent treatment regime, that are excellent. The schedule given below is an attempt to simplify the management of early infectious syphilis.

TREATMENT SCHEDULE FOR EARLY INFECTIOUS SYPHILIS

Weeks	*Drug*	*Dosoge*	*Drug*	*Dosage*	*Remarks*
1	Neoarsphenamine	0.3	Bismuth Subsalicylate	0.1	Overlap with bismuth at beginning and end of first neoarsphenamine course.
2	Neoarsphenamine	0.45	Bismuth Subsalicylate	0.2	
3	Neoarsphenamine	0.6	Bismuth Subsalicylate	0.2	
4	Neoarsphenamine	0.6	Bismuth Subsalicylate	0.2	
5	Neoarsphenamine	0.6			
6	Neoarsphenamine	0.6			
7	Neoarsphenamine	0.6			
8	Neoarsphenamine	0.6			
9	Neoarsphenamine	0.6			
10	Neoarsphenamine	0.6			
11	Neoarsphenamine	0.6	Bismuth Subsalicylate	0.2	
12	Neoarsphenamine	0.6	Bismuth Subsalicylate	0.2	
13-20			Bismuth Subsalicylate	0.2	
21-28	Neoarsphenamine	0.6			Spinal fluid examination
29-36			Bismuth Subsalicylate	0.2	
37-42	Neoarsphenamine	0.6			
13-50			Bismuth Subsalicylate	0.2	
51-58	Neoarsphenamine	0.6			
59-70			Bismuth Subsalicylate	0.2	
Total	Neoarsphenamine	32.	Bismuth Subsalicylate	42.	

(If arsphenamine is used the dosage would not exceed 0.4 gram. If mapharsen is used the dosage should not exceed 0.06 gram. Other preparations of bismuth may be used if preferred to the subsalicylate.)

The following points should be emphasized:

1. Beginning the treatment with an arsenical, overlapping the beginning and end of the first course with bismuth given concomitantly.
2. Continuous treatment with no rest periods.
3. Prolonged continuous treatment for one year after blood and spinal fluid become negative.
4. Rigidly controlled year of probation.
5. Periodical physical and serological examination for the remainder of life.

In summary, may we emphasize again that the diagnosis of early infectious syphilis is purely laboratory. Treatment begins with an arsenical, is continued with no rest periods, and is prolonged for one year after negative blood tests and spinal fluid examination. The follow-up of all contacts is important from a public health viewpoint. Periodic follow-up examinations for the remainder of the patient's life are essential.

THE TREATMENT OF DIABETES

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Goldsboro

The treatment of diabetes calls for a well planned regime, with cooperation between physician and patient. The treatment outlined in this paper is based on my experience with diabetes as a general practitioner. For a number of years I have been especially interested in diabetes; during the past three years I have had under treatment seventy diabetics.

Diabetics are classified as mild, moderate, and severe. Mild diabetes is controlled by diet alone. Moderate diabetes is controlled by 30 units of insulin a day. Severe diabetes requires above 30 units per day.

I would divide the treatment into three phases, which go hand in hand: first, instruction of the patient; second, diet; third, the use of insulin. The third phase is not required in every case. When a diabetic patient is admitted to the hospital, the first thing I do is to explain that the disease cannot be cured, but that patients who follow instructions generally realize the normal expectancy of life. I immediately obtain for each patient Joslin's Diabetic Manual, and instruct him to read the entire book. This is an excellent book, and very few patients have any trouble in understanding it. The patient is urged to ask any questions he wants to. He (and later some member of the family) is taken to the diet kitchen and shown how his food is prepared and weighed. After the first day in the diet kitchen he weighs his own food, and is instructed by the dietitian how to calculate his diet and make substitutions in order to change his menu from day to day, without change of calories. He weighs his food and calculates his diet during his stay in the hospital. After watching the nurse sterilize the syringe and prepare the insulin, he is shown the places on his body where hypodermics can be given, and is allowed to prepare and give his insulin for the remainder of his stay in the hospital, under the supervision of the nurse. He is also taken to the laboratory and shown how to test his urine for sugar with Benedict's solution.

Dieting still constitutes the most important part of the treatment of diabetes. The diet should maintain weight and yet keep the blood sugar under 150 and prevent glycosuria. With the advent of insulin dieting was neglected, but it was soon found to be more necessary than ever. I try to give as near a normal diet as possible, allowing white bread, Irish potatoes, sweet potatoes, and plenty of fruits and vegetables; but I do not allow sugar, pies or cakes, and I advise against the use of saccharine, because it creates a taste for sweets. Several years' trial of a moderately high carbohydrate diet has convinced me of its usefulness. The individual is less likely to break his diet because he has a wider variety of palatable foods. Fewer calories are required because of the increased water content of the body. The average insulin requirement is higher at first, but after a few weeks it can be reduced. The incidence of acidosis and coma is less. Infections are tolerated better, because the carbohydrates increase glycogen reserve, and tissues have a better healing power. The diet is cheaper and less upsetting to the household. I urge that every diabetic, except those very mildly affected, weigh his food and keep a record of the kind and the amount. In the adult diet the calories required vary with the weight; I usually give

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$\frac{3}{4}$ to $1\frac{1}{2}$ grams of protein per kilo; 2 to $3\frac{1}{2}$ grams of carbohydrate per kilo; 1 gram of fat to every 2 of carbohydrate. I first figure the total requirements of the diet, then the proteins, then the carbohydrate and fat. In children the protein requirement varies from 5 grams per kilo in early infancy to 2 grams per kilo at the age of fifteen. Carbohydrate requirements usually run from 2 to 5 grams per kilo, and the fat requirement is proportional. Exercise and long periods of sleep cause the blood sugar of children to be constantly changing. We must strive to keep the children well nourished, but slightly under weight.

The third phase of treatment is insulin. Its use is indicated when the diet will not control the disease. Exercise lowers insulin requirements, while the pituitary, thyroid and suprarenal glands may either inhibit the production of insulin or raise the blood sugar. In severe infections there is an increased demand on the body for insulin. The pancreas never completely loses its ability to form insulin. The normal adult requires 45 to 80 units daily. To get the maximum efficiency, insulin must be given continuously. This is where Nature scores highest, and protamine insulin higher than regular insulin. The oftener insulin is given, the smaller the number of units required. In severe diabetes and in cases complicated by infection and coma, frequent doses are required, as the average dose of insulin lasts from four to eight hours. The amount of insulin needed depends on the age, the diet, exercise, complications and infections. The maximum effect of a dose of insulin is obtained in an hour. Sansum claims that a diabetic can be given as much as 20 units a day in excess of requirements before symptoms of hyperinsulism appear. If only one dose is required, this is usually given before breakfast. Greater deficiency requires a dose before breakfast and supper, and perhaps at bed-time. The daily amount of insulin is usually divided into two doses, 5/8 being given before breakfast, and 3/8 before supper. If it is divided into three doses, they are 5/11, 3/11, and 3/11.

As a working basis insulin may be given in doses of 1 unit to every 2 to 3 grams of sugar excreted in the urine, varying with over-weight, and with complications or infections. Children may have a much lower blood sugar than adults without symptoms of insulin shock. Insulin reaction usually occurs three to five hours after injections, so there is always a greater danger of insulin shock in the afternoon and night. In insulin shock the suprarenal glands and the sympathetic nervous system attempt to relieve the shock through the production of adrenalin, causing glycogen to be discharged from the liver. One cubic centimeter of adrenalin given in insulin shock stimulates glycogen discharge from the liver, this being followed by a lowered blood sugar.

Allergic reaction to insulin is due to its protein content or to reaction of fluids. One may change from beef insulin to pork or sheep insulin, to crystalline insulin, or to protamine zinc insulin. The allergic person can be desensitized to beef insulin.

About 30 per cent of patients who start using insulin will be able to discontinue it after two years, and the urine will remain sugar-free.

Protamine Zinc Insulin

In 1933 Hagedorn and his associates started using protamine insulinate. Approximately two and one half years ago protamine zinc insulin became available for general use. Protamine zinc insulin is usually given in one dose one hour before breakfast each day, with a dose of regular insulin fifteen minutes before breakfast, if it is needed. The Danish method was to give protamine insulin in the evening and a small dose of regular insulin in the morning. Protamine insulin has the following advantages: Fewer injections are necessary after the dosage has become established; blood sugar is maintained at a more constant level; there is less danger of acidosis and coma; the patient is able to take more carbohydrates. The full effect of protamine insulin is not obtained for three to five days and we have to be careful that the effect of previous doses does not overlap. Insulin shock is less likely to occur and comes on more slowly with protamine insulin but it is more severe and requires more treatment. Unless the patient is given a large amount of carbohydrate, he is liable to develop another shock.

The diet with protamine insulin is better arranged: 20 per cent of the carbohydrates for breakfast, 40 per cent for dinner, and 40 per cent for supper. This allows more carbohydrates at the time when the patient is getting more effect from the protamine insulin. An adult who has never taken insulin may be started on protamine insulin by giving him 15 to 20 units an hour before breakfast; a child, 6 to 8 units. The blood sugar should be estimated in three days; if it is elevated the protamine insulin should be increased from 2 to 10 units per dose. For a diabetic who has been taking insulin, the change to protamine insulin should be made by decreasing the morning and afternoon doses of regular insulin 2 units each per day, and increasing the morning dose of protamine insulin by this number of units. This gradual change lessens the danger of glycosuria and hypoglycemia. If the total dosage of regular insulin previously used was 30 units or less, the change to protamine insulin can be made suddenly by giving 1/2 to 3/4 the number of units of protamine insulin. Regular insulin should always be given in coma, acidosis and infections, because of its immediate action.

Hypoglycemia

The symptoms of hypoglycemia are sudden and acute hunger, sudden weakness, sweating, nervousness, emotional and mental disturbances—such as laughing, crying, confusion, aphasia—and later convulsions and death if no treatment is given.

Treatment of first importance is prevention by correct balance between diet, exercise and insulin.

Most patients who have taken insulin for any length of time have had mild insulin shock and know the early symptoms; so they take some form of carbohydrate immediately—usually sweetened orange juice, candy, banana, etc. Later, if shock is severe, glucose is given intravenously, and adrenalin or other stimulants are given as needed.

Symptoms of protamine zinc insulin shock are different from those caused by regular insulin. Symptoms are headache, weakness after slight exertion, mental confusion, numbness of tongue and lips, fatigue, heaviness of the extremities, amnesia.

The treatment of shock from protamine zinc insulin is essentially the same. However, shock is more likely to recur after first being relieved, so more carbohydrates, and carbohydrates which are more slowly absorbed—such as apples, bananas and bread—must be given every one-half to one hour until a glycosuria is provoked. Glucose should be given intravenously as needed. The protamine insulin should be decreased by 2 to 10 units in the next dose.

The Treatment of Diabetic Acidosis

Acidosis is an emergency. Two important points in its treatment are:

1. The relief of dehydration.
2. The increase of carbohydrate oxidation by the use of regular insulin.

Give at least 2000 cc. of fluids every twenty-four hours, chiefly as normal saline intravenously, and 10-20 grams of carbohydrates by mouth every two or three hours. This aids in carbohydrate combustion and also helps to prevent hypoglycemia.

The initial dose of insulin in acidosis depends on the amount of sugar in the urine, on the blood sugar, and on the CO_2 combining power. It varies from 20 to 100 units, and can be given intravenously if necessary. After that 10-30 units should be administered every two hours. The urine should be checked every two hours. As sugar in the urine decreases, the dose of insulin should be decreased. Blood sugar estimations are done as needed.

The diet at first should consist of orange juice, milk, oatmeal, gruel, broth, tea. When the acidosis disappears, the patient should be put on a diabetic diet, and the insulin doses rearranged.

If the stomach is distended gastric lavage should be done.

Circulatory stimulants should be given as needed.

Infections

Infections demand immediate control of the diabetic state. If there is abscess formation, it should be incised and drained as soon as possible. Twenty to thirty units of insulin should be given every two or three hours, with frequent estimation of sugar in the urine and blood.

Summary

Diabetes mellitus has been discussed from the standpoint of diagnosis, diet, insulin administration, and complications. The use of a relatively light carbohydrate diet is advocated.

THE PRESENT STATUS OF ANESTHESIA

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ASHEVILLE

The advent of new drugs and new equipment, and the development of new techniques within the past few years has increased research and study of anesthesia. For fifty years or more little or no work had been given to this extremely important part of medicine. At present there are many able workers in well equipped laboratories and clinics carrying on investigations, studies, experimentations, for better anesthesia. The ideal anesthetic agent has not yet been found.

Anesthesia has developed today into a highly specialized field engaged in by physicians who have been trained as experts and who by their training are qualified to choose and administer a particular type of anesthesia to each individual case. This branch of medicine has grown so much and become so important that within the past two years it has been recognized as a specialty. Physicians who are members of the American Society of Anesthetists, and of the A. M. A., and who have qualified by meeting the requirements can now be certified as specialists in anesthesiology.

At present the demand for expert anesthetists far exceeds the supply. The larger medical centers, clinics, and hospitals have been taking what men were available. These men have had a two or three years' fellowship in anesthesia, after serving two-year internships. They become heads of the department of anesthesia in their respective hospitals or clinics and have the responsibility of training residents who wish to major in anesthesia. For the older physician interested in anesthesia, there are several schools and hospitals offering post-graduate courses lasting a few weeks to a few months. It is from this source that the smaller towns and communities are getting their anesthetists.

The economic side of the practice of anesthesiology is a difficult one and apparently is becoming more complicated. When a physician becomes identified as a specialist in any field, it is not long before his work is limited to that field. This is particularly true of the anesthetist. To become certified in anesthesiology, the physician must limit his practice to anesthesia. That is why men who have taken up anesthesia have gone to large centers. The man who practices anesthesia in small centers and does not care to be certified (that is, limit his entire practice to anesthesia), but expects to do some general work on the side, will surely be disappointed. His general work gradually disappears and leaves him dependent entirely upon anesthesia. It is extremely difficult now to increase the small fees set by family doctors, the occasional anesthetists, and even technicians for more than fifty years. Since the specialist is doing only anesthesia, his fees are necessarily higher than those established by custom. The totally inadequate fees allowed by the hospital care associations, insurance companies, industrial commissions, and states and counties for indigents also help to deny a community the services of this modern branch of medicine. It is only with the cooperation of the surgeon that the anesthetist in an average town can survive. The anesthetist expects to do the service and charity cases along with his surgeons. He has to accept the socialized group fees as they are dealt out, but he also expects proper remuneration from the private cases—based on the hazard of the operation, type of anesthesia used, time consumed, and ability of the patient to pay.

In discussing anesthetic agents and their administration, it is not the purpose of this paper to attempt to tell the reader what he should use or how he should use it. It would be absurd for an essayist to instruct any assembly along such lines when he is unfamiliar with local conditions. But it is my purpose to discuss briefly some of the habits, ideas, problems, and procedures as they exist elsewhere and as I see them, in the hope that they may be of interest to you.

Inhalation anesthesia continues to be most universally used. Spinal anesthesia is becoming more and more popular, owing no doubt to a better understanding of it. Intravenous anesthesia has become remarkably popular in some localities and has not taken at all in others. The use of regional anesthesia, with the exception of spinal, has neither increased or decreased for several years.

The closed method of inhalation anesthesia —that is, rebreathing with the carbon dioxide absorption technique—is now univer-

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sally used. However, the open method remains the safest for the occasional anesthetist and for the person who has not been trained. The chief advantages of the closed method are as follows:

1. The expense of anesthetic mixtures is reduced about 75 per cent.
2. Breathing is quieter during anesthesia, making abdominal surgery less difficult and conserving the patient's energy.
3. The patient's body heat and moisture are conserved.
4. Danger of explosion and fire is reduced.
5. Postoperative sequelae, such as nausea and vomiting, are lessened.
6. Minute-to-minute control of the patient is possible.
7. The patient can be given any amount of oxygen that is indicated.

The main disadvantage is that the patient is not breathing a normal atmosphere. It is this point which has inspired workers to continue their search for an ideal anesthesia. Dr. Ralph Waters at the University of Wisconsin recently stated that we will not have an ideal anesthesia as long as the patient is not breathing atmosphere to which he is accustomed. Nevertheless, closed ether is much more satisfactory to patient, surgeon, and anesthetist than open ether, even though there is normal atmosphere with open ether. We are trying at present the use of compressed air as a diluent and carrier. I have also used the inert gas helium, only to find that it is easier to allow the patient to inspire normal air occasionally and to expire into the breathing bag. This will keep some air with its nitrogen and other inert gases in the mixture. It may be coincidence, but our atelectatic cases have been rare. It is reasonable to assume that with our rapidly absorbable anesthetic mixtures, together with the disappearance of nitrogen from the mixture (which eventually occurs in a closed circuit), we are inviting atelectasis by the absence of any sustaining inert gas.

It is highly important that a free airway be established at all times, not only for good anesthesia but for the prevention of atelectasis and the building up of a high carbon dioxide content. Any number of artificial pharyngeal airways are on the market and any one of them will suffice as long as it will establish a free passage. Intra-trachael catheters of course offer the best artificial airways. They are used routinely in pneumonectomies, lobectomies, and in any thoracoplasty where there is an abundance of secretion or sputum. A free airway is then always patent, aspiration is easily accomplished and pressure can be applied at a second's notice. As a rule, intubation is done in kidney cases and spine fusions, and is often necessary for short, thick-necked individuals.

The anesthetist's first duty is to the patient, and he must exercise every precaution, anticipate every untoward change and be prepared to cope with any situation. For example, blood pressure readings should be taken at regular intervals during all major surgery and in the poor risks. If the blood pressure begins to fall something must be done about it then. I have often wondered why the College of Surgeons stresses the importance of writing histories, examinations, consultations, progress notes, etc., and yet has only a small place allotted on their history sheets for the most important hour of a patient's stay in the hospital. The interested anesthetist will see to it that the hospital has anesthesia charts. Most anesthetists make personal records for their own files, and if they are that important to the anesthetist, they should be that important to the hospital. They are valuable not only for the protection of the patient but for the protection of the surgeon, the hospital and the anesthetist.

With the increased use of explosive anesthetic agents there have naturally been several explosions with their resultant publicity. The American Society of Anesthetists began an intensive investigation about two years ago, and I believe their committee is still functioning. They investigated every explosion or fire for the past twenty years about which they could obtain any information. The committee has reported that a large percentage of the explosions were preventable; that the types of explosive or igniting agents included open flame, cigarettes, high frequency current, cautery, motor on vaporizer, static and x-ray. There were no explosions while a *complete rebreathing* anesthesia was in progress; this of course included ether and oxygen, and cyclopropane. The explosions from *static* occurred immediately before or immediately after the anesthesia. Some of the causes of static were: removal of woolen blanket from patient; touching of gas machine or patient's face by some person other than the anesthetist; removal of cloth covering from machine, etc. The committee drew the following conclusions:

1. "That explosible anesthetic agents with cautery or high frequency current in head, mouth, and neck operations is a bad combination.
2. "That open armature motors and open switches on ether vaporizing machines should be discontinued.
3. "That complete rebreathing anesthesia, provided there are no leaks around the face piece of machine, *can* be used in in presence of high frequency, x-ray, and cautery. But the possible escape of inflammable gas before, during, or after an anesthetic in an x-ray room makes the use of these gases very dangerous.
4. "That the use of inflammable gas with *in*complete rebreathing in the presence of an igniting agent should be condemned.
5. "That static was the most frequently mentioned igniting agent.
6. "That in order to eliminate static more experimental work must be done on room humidity and the question of grounding."

There are two schools on the question of grounding. I prefer to have no ground wires or chains attached to machine, operating table, patient, or myself. I believe a ground wire will certainly invite a static spark more quickly than if no ground wire is present. An unseen broken ground is certainly dangerous. It is very simple and easy to maintain a like potential between anesthetic machine, patient, operating table, and anesthetist by the touch of the hands.

There have been three deaths from explosions out of two and a third million anesthesias, and from two to four explosions out of each one hundred thousand anesthesias.

It is the purpose of this paper to give only a brief outline of the anesthetic agents and their relative values.

Divinyl ether (marketed commercially as Vinethene) is a new inhalation agent which has stood a thorough clinical investigation and is now accepted. It is highly volatile and produces anesthesia about as quickly as gas. The patient reacts from it about as quickly as from gas. There is a wide margin between the blood concentration necessary for anesthesia and lethal dosage, so that the agent is fairly safe. It is to be used only in short operations. It is especially indicated in extraction of deciduous teeth in children, in obstetrics, fractures, painful dressings, incision and drainage, etc. Because divinyl ether is about four times as potent as ethyl ether and because of its quick action, constant observation must be maintained. This agent is being used by a large number of men but, as yet, has not been universally adopted.

Ethyl chloride as a general agent, in my opinion, has but two uses or indications. First, in doing a paracentesis of an ear drum on a child in the home; and, second, in the extraction of deciduous teeth. It must only be used for induction. When the child takes the first breath in the surgical anesthesia stage, *that* is the indication to remove the anesthetic agent entirely and immediately.

Chloroform is still used in England and in Europe, but in this country its use is limited. It is still employed by some obstetricians with apparent safety because of the small amount used and the short duration. Very little is used in general surgery—and that should be condemned. It will probably be used for some time to come, and safely, in obstetrics in the rural districts where the operator does not have access to the services of an anesthetist.

Ether remains our safest and most popular inhalation agent. It is safest on account of the wide margin between surgical anesthesia concentration and lethal concentration. It is popular because of the ease with which it is given by anyone, regardless of experience or training, and because it is our best relaxing agent. The fact that closed ether (that is, ether with oxygen, using the carbon dioxide absorption technique) has been universally adopted by physician anesthetists, does not mean that open drop ether is to be condemned. However, the family doctor who is referring the patient should not embarrass the surgeon by asking to be allowed to give the anesthetic. The surgeon can do his best work only when he is working with the team to which he is accustomed. The surgeon has the right—legally, ethically, and morally—to choose his anesthetist.

The indications, contraindications, and the use of ether are familiar to all. Those of us who are using cyclopropane are using less ether than ever before. We still use ether in long cases, abdominal cases, tonsillectomies, etc., and we add ether to our gaseous mixtures for relaxation. We use it whenever there is a respiratory depression, as cyclopropane is not a respiratory stimulant.

We have not the fear of using closed ether with tuberculous cases as we did of using open ether. Churchill in Boston uses closed ether for his thoracoplasties. Ether today occupies the unique position of being the one and only reliable stand-by. When all other anesthesias fail, ether can always be relied upon.

Nitrous oxide still commands a definite place among anesthetic agents. It is nonexplosive and is therefore indicated when the cautery or electro-surgical units are to be used about the head or neck, or for cauterizing the lung in lung abscess. It is valuable as an inducting agent for ether and ideal as an analgesia in the first stage of labor. With the exception of these indications, the writer has not used nitrous oxide in several years. Because it does not have good relaxing properties, some ether is usually added to it; and nitrous oxide, ether and oxygen make a powerful explosive mixture.

Ethylene is explosive. It allows a greater percentage of oxygen than nitrous oxide, and gives a little more relaxation. Ethylene has been supplanted entirely by cyclopropane.

Clyclopropane has been in general use about seven years. During this time it has earned for itself the top rank in gaseous agents. It has been a godsend to us for our poor risks, the tuberculous, the aged and feeble, and for those patients in whom we want the least possible after-effects.

Cyclopropane is given with 50 to 80 per cent oxygen, which insures a slow pulse, slow respirations, and a good color. It has a much greater relaxing power than nitrous oxide or ethylene, but not quite so great as ether. The patient usually reaches the surgical stage of anesthesia in about three minutes without the usual manifestations of the excitement stage seen with ether. When the anesthetic is stopped, the patient is fully awake in five to ten minutes, usually with little or no vomiting—certainly without the nausea and vomiting frequently caused by ether. Only three contraindications are known to the writer. These are operations on head or neck when electro-surgical units are to be used, auricular fibrillation, and after administration of adrenalin. My youngest patient was two months old and the oldest was ninety-five. In more than four thousand cases, I have found only one case that could not be anesthetized. There have been no fatalities and no unusual postoperative complications, with the exception of six postoperative *pseudo* shock cases. The pseudo shock patient does well during the operation but in about ten minutes after he has been returned to his room, he goes into what looks like a bad surgical shock. This lasts for one or two hours, and then the patient regains his composure and becomes perfectly normal. This condition is due apparently to the sudden withdrawal of such a high oxygen concentration, which upsets the acid-base equilibrium. For this reason, I have been using air (and occasionally some helium) to aid in diluting the high percentage of oxygen. There have been no pneumonias, and atelectasis has been a rarity. Ether is usually added (10 to 20 cc.) in abdominal work for relaxation.

Cyclopropane is particularly indicated in thoracic surgery, especially in the tuberculous patient, on account of the high concentration of oxygen. It is ideal in obstetrics, for use in caesarean sections and during the second stage of labor. The baby is delivered pink and usually cries immediately. It is used in sections without the aid of ether. As yet, the gas has not been found in the baby's blood.

The dread is taken out of the suprapubic prostectomies in old men by the use of cyclopropane. It is an ideal anesthetic for pinning the hip with a Smith-Peterson nail in elderly people. These of course are only a few of the instances where the gas is well suited.

The premedication is about the same as that to which we have been accustomed with ether; however, large doses of morphine must be avoided, for, as was stated, cyclopropane is not a respiratory stimulant. The barbiturates seem to go well with the gas. Avertin given in 70 to 80 mgs. per kilo or less makes an ideal basal anesthetic for cyclopropane. Paul Wood of New York states: "Avertin and cyclopropane is the nearest approach we have to an ideal anesthetic."

Carbon dioxide is a much discussed subject in anesthesia. A patient can build up a high CO_2 content before it is recognized, especially with the rebreathing technique. The soda lime may have lost its usefulness, or the filter valve may be faulty. Even with open ether the patient may not get the proper exchange of gases, owing either to a faulty airway or to the position on the table.

The use of medicinal CO_2 for resuscitative purposes is to be condemned. It is still used by some nurses, and even by some obstetricians and pediatricians, on new born infants who fail to breathe properly. Actually the baby has more CO_2 at the time than he can cope with, and is building up more every minute. He is probably anesthetized from his own CO_2. The practice of "blowing out" a patient by the use of CO_2 after an anesthetic is not recommended, because of the possibility of inspiring foreign material, saliva, or mucus, and the chances of promoting acidosis.

Helium is being used to a small extent as a part carrier in obstruction cases and as an inert gas.

Intravenous anesthesia is becoming more popular each year. It has many advantages during certain procedures and there are many distinct indications for its use. Pentothal-sodium seems to be gaining more friends than evipal. It is our experience that pentothal acts more smoothly and that the patients seem to behave better. We use intravenous drugs only when specifically indicated, and not routinely.

Avertin by rectum has largely supplanted ether and paraldehyde by rectum. Although avertin occasionally produces surgical anesthesia, it should never be given for this purpose, but only as a basal anesthetic. It takes away the horror of going to the operating room, requires less anesthetic agent, and gives a quiet prolonged sleep after the operation. We are using it routinely as a basal in all our thoracoplasties. After running a series of fifty cases with avertin and fifty cases without, we came to the conclusion that the patients with avertin got along better.

Avertin is particularly indicated in nervous women and children. With local anesthesia it solves the problem of what to use in intrapleural pneumolysis. I have had no accidents with this drug and no untoward sequelae which could be attributed to its use.

As stated previously, spinal anesthesia is becoming more popular — probably because we have a better understanding of its use and are not getting the bad results we did a few years ago. There are still some surgeons and anesthetists who do not avail themselves of the advantages that spinal anesthesia offers; while others use it too recklessly, without proper understanding of its dangers and limitations. When spinal anesthesia was first introduced, its use was advocated in the bad heart cases and in poor risks. Now we know that the patient must be in good general condition. The cases must be selected.

The two greatest dangers in spinal anesthesia are respiratory arrest and a fall in blood pressure. The major problem is the control of blood pressure, or rather the avoidance of any means that might cause a fall. This resolves itself principally into the control of the anesthetic level.

The vasomotor system which controls the tone of the blood vessels throughout the body emerges from the first dorsal to the third lumbar vertebra. An anesthetic agent introduced and remaining below the third lumbar will have no effect upon the blood pressure. As it ascends, more of the white rami are blocked, with corresponding loss of tone in their relative vessels. When the first thoracic segment is reached, all white rami have been blocked and all blood vessels have lost their tone. At the same time, the cardiac accelerators which emerge in the first four or five thoracic segments have also been blocked. This decreased cardiac efficiency has its effect in the fall of blood pressure(1).

The same blocking occurs with the thoracic nerves, leaving the phrenics to carry on the work. If the anesthesia progresses further, the phrenics too are blocked and respiration ceases. Only efficient artificial respiration with oxygen until the block wears off can save the patient.

The anesthetic level can be controlled in three ways: by the site of the puncture, by the amount of fluid withdrawn and then replaced, and by gravity. The specific measurement of the withdrawn spinal fluid and of the rate with which it is replaced is the most reliable method. Those of us who use this method no longer put the patient into the deep Trendelenburg position as was formerly done. If a patient is put into the Trendelenburg position and the anesthetic is hyperbaric, it will travel an indefinite way toward

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1. Maxson, in Anesth. and Analg., March-April, 1938.

the cranium. If it is hypobaric, it will go the other way, with an inadequate anesthesia as a result.

Ephedrine is given before injection of the agent to help maintain blood pressure. A 22 gauge needle with a short and sharp bevel is preferable for making the puncture. The patient is kept horizontal for twenty-five minutes at least.

The greatest of care must be exercised in moving the patient, as for instance in using the lithotomy position.

The surgeon must not be rough while working in the abdomen. A rough surgeon is a contraindication to spinal anesthesia. The patient must not be moved on to the stretcher for at least forty-five minutes after injection, regardless of the length of the operation. The patient should not be left alone or in the care of a nurse, but should be in the care of a physician while on the operating table. Oxygen should be immediately available, as well as supplementary anesthetics.

I use novocain crystals for most procedures —never more than 150 mgs.—, and pontocain is occasionally used for long procedures. In moribund cases, 50 mgs. of novacain supplemented with cyclopropane is quite satisfactory.

Concerning blocks, I will only mention that caudal and transacral blocks are now being replaced by low spinals. Novocain in the fifth lumbar space is easier to give, requires less time, gives better anesthesia, and has less general effect on the patient.

Summary

The specialty of anesthesia has been recently recognized and certification is now possible; but the practice of the specialty, outside of large medical centers, presents economic problems.

Great advancement has been made in recent years in perfecting technique and anesthetic agents. For many reasons, ether remains the safest and most popular anesthetic agent, particularly in the hands of one not especially trained in anesthesiology. Cyclopropane, in the hands of the expert, is rapidly replacing other gases. Various types of anesthetic agents, their administration, indications and contra-indications for their use are discussed.

SURGERY IN DIABETES

W. H. Sprunt, Jr., M. D.

Winston-Salem

Diabetes present over a period of years, even if fairly well controlled, results in varying degrees of arteriosclerosis, with attendant complications. It was a realization of this fact that led to Joslin's statement, "A diabetic patient is as old as his age, plus the duration of the disease."

Carelessness and incompetence in the treatment of diabetes may result in continued glycosuria, and possibly coma. Diabetes will increase the severity and incidence of infection, and may interfere with the healing of surgical wounds. On the other hand over-zealous treatment may precipitate insulin shock with all of its attendant dangers. Experience suggests that in controlled diabetes a clean wound will heal in a manner comparable to one in a non-diabetic of the same age. On the other hand diabetics are more susceptible to infection. Tissue necrosis is more frequently seen, and when present is apt to be more extensive. Infection makes diabetes more difficult to control, and the diabetes in turn makes it harder to eradicate the infection. Pneumonia is more prevalent following upper abdominal operations in the diabetic than in the non-diabetic patient. Disruption of wounds is more common in diabetes. Diabetics do not stand multiple operations well. In cancer diabetes is a desperately severe complication.

When patients come to operation for elective surgery, such as goiter, hernia, etc., where there is no particular emergency, the patient should go to the operating table well fed, his liver stored with glycogen, acid free, and with no more than a trace of sugar in the urine. Here the services of an expert internist are indispensable. Pre-operatively the patient under his care will be prepared so as to obviate as far as possible acidosis and its complications.

Such preparation usually includes, among other things, the giving of at least 150 grams of carbohydrates in the twenty-four hours preceding operation, the control of glycosuria by small doses of insulin given at short intervals and by adequate fluids—2500-3000 cc.—given until about four hours before

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Read before the Eighth District Medical Society, High Point, November 2, 1939.

operation. Where this preparation is possible, the patient might be called the minimum diabetic risk. Even so it must be recognized that these patients offer a higher operative risk than similar patients without diabetes. This is especially true after fifty years of age, when the diabetic is apt to have vascular changes which complicate the picture.

For the diabetic who comes to the operating table on account of a surgical emergency, the outlook is not so good. Here the scope of the operation may have to be limited because of the patient's condition. Intravenous sodium chloride and glucose plus insulin are of help, but it is often a matter of fine judgment just how much the patient can stand.

Much attention has been paid in the past few years to the diabetic patient whose symptoms simulate those of an acute abdominal emergency. The cause of this is still open to debate. Many think that it is due to lack of available sodium chloride. At any rate, we are all familiar with the diabetic patient who comes in complaining of generalized abdominal pain, nausea, vomiting, and spasm of the abdominal muscles. On examination we may find fever, leukocytosis, glycosuria and possibly acidosis. The diagnosis can usually be made by a history of diabetes, and by the fact that the symptoms, instead of localizing, become more generalized. Insulin will quite often give relief in a few hours. When there is reasonable doubt that the condition is due entirely to diabetes, it is best to consider exploratory laparotomy. This is rarely necessary.

In diabetic children who have appendicitis, the attack is apt to be more severe than in the non-diabetic, and it is not so apt to subside. In the definitely acute attacks, early operation is advisable. In the child who has diabetes and a history of repeated, even though mild, attacks of appendicitis, it is much better to get the appendix out during the interval than to run the risk of a fulminating attack when it may not be possible to get the patient in good condition for operation.

In operating upon the biliary tract in diabetics, indications for operation should be very clear-cut. The so-called non-calculous gallbladder patient with vague attacks of indigestion, etc., is probably better off without operation. The patient who is known to have stones is somewhat in the position of the child who has recovered from an attack of appendicitis. We know that in all probability he will have trouble sooner or later, and if he has been bothered with the gallbladder at all it is probably best to prepare him and operate without waiting for the attacks to become severe. It is the general opinion that attacks of acute cholecystitis in the diabetic are not so apt to subside as in the non-diabetic. For this reason the patient with an acute cholecystitis must be watched very closely and, if there is not prompt and marked improvement, operation must be considered.

In accident cases it must be remembered that the presence of diabetes renders the walls of the vessels more susceptible to trauma. It may also delay healing in fractures.

The most dangerous infection requiring surgery in the diabetic is apparently the carbuncle; the most common, gangrene of the extremities. In treating carbuncles it should be borne in mind that the average mortality is five per cent, and that most of the mortality comes in the cases of large carbuncles. As all large carbuncles are at one time small, it should be a simple matter to reduce the mortality by early and adequate treatment. By this is meant the application of heat, x-ray, etc., to help localize the carbuncle, and, of course, general treatment for the diabetes. Crucial incision under general anesthesia, usually made with the electrocoagulation unit, is probably the best. The edges should be undermined. The wound may be dressed with Dakin's or azochloramid solution.

In gangrene of the extremities, the important factor is not so much the severity of the diabetes as the state of the blood vessels supplying the part. In infections of the lower extremity not requiring radical surgery—for example, in a foot where the circulation is adequate as shown either by pulsation in the dorsalis pedis or by good collateral circulation — gangrene may be present, but it is secondary to infection and local thrombosis and not to primary arterial occlusion. These cases frequently show marked paresthesias and at times anesthesia. It is usually safe to remove toes under these conditions. If the infection is not localized, amputation of a toe is dangerous, and, if pain in the part has been severe, amputation is usually not successful. Only rarely is it permissible to amputate a toe in a pulseless foot.

As to choice of amputation in gangrene of the extremity, amputation through the upper third of the leg is done in: (1) presence of extensive infection of the foot, plus severe diabetes; (2) septicemia secondary to gangrene; (3) a patient so debilitated that primary healing is not expected. Amputation through the upper third of the leg is not done if: (1) the general condition of a patient precludes the use of an artificial limb; (2) popliteal pulsation is absent; (3) lymphangitis above the ankle is present.

Indications for radical amputation are: (1) uncontrollable spread of gangrene to the extent of destruction of the weight bearing portion of the foot; (2) spreading infection that cannot be controlled by incision and drainage. Supracondylar amputation is probably the most successful of major amputations. It is usually done without tourniquet and without drains.

In deciding upon the site for amputation, we must consider the pathological process, the level of effective collateral circulation, and the prosthetic requirements. The patient's ability to walk, however, after the amputation is performed must not be given too much consideration. If the amputation has to be done above the toe, the next most logical place is the middle of the upper part of the leg. If it must be above this, the supracondylar site is generally considered better than the knee-joint.

The average age of patients coming for amputation on account of gangrene is sixty-two years. The mortality varies from 20-40 per cent. The commonest cause of death is septicemia. In amputation for gangrene, local infiltration of novocain and tourniquets are both contraindicated. Spinal anesthesia is probably safest. In the choice of an anesthetic various factors must be considered. Ether has been shown to cause glycosuria and acidosis. However, where relaxation is needed it is frequently used in spite of its dangers. Chloroform is too toxic and should not be used. Nitrous oxide, ethylene and cyclopropane all are relatively safe. For the upper abdomen, a combination of spinal anesthesia and one of the gases, or abdominal wall block plus one of the gases is best. If nitrous oxide is used care must be observed not to allow the patient to become cyanotic. Evipal is suitable for short operations, where too much relaxation is not necessary. Procain must not be used in amputating a toe, nor as anesthesia for a carbuncle. Spinal anesthesia, novocain 50-75 mg., is usually suitable and safe for amputations. Avertin is dangerous in the presence of cardiovascular diseases.

In the preliminary preparation for operation it must be remembered that diabetics are usually more sensitive to drugs, and the dose of morphine should be governed accordingly. After amputation it must be remembered that the tolerance for sugar immediately rises and the dose of insulin must be watched carefully.

THE PRIVATE MEDICAL, DENTAL AND NURSING PRACTITIONERS

J. Buren Sidbury, M.D., F.A.C.P.

Wilmington

Never in our history has there been an opportunity to accomplish more medically for our people than there is today. The public is becoming better educated along medical lines than ever before. This fact is a definite challenge to the physician, dentist, hospital superintendent, nurse and public health man to unite forces and see that all of our people get all medical care that is needed, as well as education on medical subjects. Our State Board of Health is the head to which we look for plans and policies for the good of our people as a whole. The county health department is our first lieutenant, whose duty it is to inform the public and the local profession of health measures that will benefit the local community. The proper leadership in these positions will accomplish much toward executing the plans to be carried out.

Nurses

Probably the most important cog in the wheel of progress of health education is the nurse. The nurse has an approach to the public which is different from that of the physician. She is admitted into the home primarily as a skilled workman; but she is also taken in confidence by the people, and her advice is sought and respected. For this reason the nurse is a most potent factor in

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Read before the North Carolina Public Health Association, Greensboro, May 1, 1939.

REPORT OF HIGH POINT PELLAGRA CLINIC*

FREDERICK R. TAYLOR, M.D., F.A.C.P.

HIGH POINT

The High Point pellagra clinic, the first of its kind in North Carolina, opened the first week in April and closed on October 31, 1939. As pellagra gives practically no trouble in the winter, it was considered unnecessary and unwise to keep the clinic open in those months. For a short time the clinic operated two mornings a week. After most of the patients had been examined carefully, one morning a week was sufficient to care for them. The High Point Chapter of the American Red Cross acted as a clearing house for the patients, arranging for them to be brought to the clinic and taken back home. It also furnished nicotinic acid and yeast, carried on valuable social service work, and paid the clinician a nominal fee of $5.00 per clinic session. The Health Department of the City of High Point furnished rooms for the work, a public health nurse to assist in the clinics, and facilities for routine chemical urinalyses.

One hundred and fifty-seven patients came to the clinic. Of these, 109, or 69.43 per cent, showed present evidence or gave a past history of pellagra. Those with a past history of a pellagrous eruption were considered candidates for preventive treatment. Forty-eight, or 30.57 per cent, were considered non-pellagrous. In these cases the following diagnoses were made:

Alkalosis	1
Arteriosclerosis	2
Diabetes mellitus	1
Eczema (squamous)	1
Epidermophytosis	1
Goiter, toxic	1
Gynecologic and urologic conditions	3
Menopause	1
Methemoglobinemia (chronic acetanilid poisoning due to prolonged use of B-C headache remedy)	1
Morphine addiction	2
Peptic ulcer	2
Psoriasis	1
Purpura	1
Scabies	2
Sunburn	1
Syphilis	2
Tinea versicolor	1
Tuberculosis of spine and possibly of skin	1
Undetermined	23

The large number of undetermined diagnoses is due to the fact that we were not attempting to operate a general diagnostic clinic.

Of the 109 pellagrins, past and present, 9, or 8.26 per cent, had had no recurrence of symptoms within five years and were considered not to need treatment unless there was evidence of another recurrence. Eleven, or 10.9 per cent, who had a mild pellagra were severely ill with some other trouble and were referred to their physicians for treatment. Of those under treatment 16 stopped coming for various reasons.

Age. The youngest patient was two years and nine months old. The oldest pellagrin was seventy-nine. The average age of the pellagrous patients was 42.7 years. Taking age groups by decades we find the following representations:

Age Group	*Number of Patients*	*Percentage*
1-10 years	7	6.42
11-20 years	8	7.34
21-30 years	8	7.34
31-40 years	35	32.11
41-50 years	18	16.51
51-60 years	16	14.68
61-70 years	13	11.93
71-80 years	4	3.67

Sex. Sixteen, or 14.68 per cent, were males; 93, or 85.32 per cent, were females.

Race. Three, or 2.75 per cent, were colored; 106, or 97.25 per cent, were white. The effect of sunlight is one of the determining factors in producing active symptoms of pellagra; and as the colored race is much less affected by exposure to strong sunlight than is the white, the incidence of pellagra is proportionately higher in white people. Dr. M. B. Davis, an able colored physician with an extensive practice, tells me he has seen only two undoubted cases of pellagra in the negro race in a period of four years. The cases reported by Spies from Birmingham, Alabama, suggest a higher relative incidence among the negroes in that locality, perhaps due to exposure to more intense sunlight. I also believe, though I have no figures to prove it, that in the more severe type of pellagra which was rife twenty-five years ago, there was a higher relative incidence in negroes than there is today, when pellagra has become much milder.

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*Sponsored by the High Point Chapter of the American Red Cross and the Health Department of the City of High Point.

Occupation	*Number of Patients*	*Per-centage*
Housework	47	43.12
No occupation	28	25.69
Cotton mill worker	16	14.68
School child	7	6.42
WPA worker	5	4.59
Hosiery mill worker	3	2.75
NYA worker	1	0.91
Midwife	1	0.91
Laborer	1	0.91

Duration of Disease	*Number of Cases*	*Per-centage*
Less than 1 year	3	2.75
1 year	13	11.93
2 to 5 years	36	33.03
6 to 10 years	32	29.36
11 to 20 years	20	18.35
21 to 30 years	5	4.59
Indefinite	2	1.83

The longest duration was thirty years in one case.

Recurrences	*Number of Cases*	*Per-centage*
1	20	18.35
2 to 5	28	25.69
6 to 10	22	20.18
11 to 20	10	9.17
Over 20	4	3.67
None	25	22.94

Parts of body affected by eruption (from history)

Area	*Number of Cases*	*Per-centage*
Upper extremities	87	79.82
Lower extremities	60	55.05
Face and neck	31	28.44
Back	5	4.59
Abdomen	1	0.91
Chest	1	0.91

Alimentary tract symptoms:

Symptom	*Number of Cases*	*Per-centage*
Sore mouth or tongue	77	70.64
Burning or hurting in abdomen	64	58.72
Constipation	40	36.70
Diarrhea	29	26.61
Gas	18	16.51
Vomiting	9	8.76
Nausea	6	5.51
Loss of appetite	4	3.67
Sour stomach	3	2.75
Weak feeling in stomach	1	0.91

It is especially interesting to note in this connection that 40 out of the 109 cases had constipation, in contrast to only 29 cases with diarrhea. This shows plainly that pellagra is changing its characteristics. In its earlier, more acute manifestations in this country, the great majority of its victims had diarrhea, and the "three D's"—dermatitis, diarrhea, and dementia—were taught as the diagnostic triad of pellagra, to which there were relatively few exceptions.

Pains other than abdominal:

Areas Affected	*Number of Cases*	*Per-centage*
Head	15	13.76
Feet and legs	15	13.76
Back	5	4.59
Chest	4	3.67
Eyes, back of neck, throat, fingers and feet, left flank, and all over body, each	1	0.91

Paresthesias:

Areas Affected	*Number of Cases*	*Per-centage*
Upper extremities	45	41.28
Lower extremities	30	27.52
All over body	10	9.17
Abdomen	3	2.75
From waist down	1	0.91
Back	1	0.91
Left side	1	0.91

All the above consisted of the usual numbness and tingling. Other paresthesias noted were: roaring in head, rushing of blood to head (not due to nicotinic acid), and queer feeling in eyes—each in one case. One patient made the very interesting statement that the muscles in her arms felt as if there were little bells ringing in them.

Weakness was present in 83 cases, or 76.15 per cent.

Nervous Symptoms	*Number of Cases*	*Per-centage*
Vertigo	78	71.56
General nervousness, irritability, fearfulness, worry	47	43.12
Forgetfulness or confusion	37	33.94
Insomnia	36	33.03
Definite history of a psychosis	8	7.34
Fear of going crazy	6	5.50
Depression, blind spells, dream state, delirium, somnolence, general shaking—each	1	0.91

Past Treatment	*Number of Cases*	*Per-centage*
Yeast	78	71.56
"Shots"	25	22.93
Diet alone	11	10.09
Nicotinic acid	6	5.50
"Drops"	5	4.59
Valentine's Liver Extract	3	2.75
Patent medicines	3	2.75
Parenteral liver extract	2	1.83
Cod liver oil	2	1.83
Myeladol, cod liver oil concentrate, hydrochloric acid, vegex, salve, thiamin chloride — each	1	0.91
Miscellaneous	8	7.25

Previous diet was adequate in 18 cases, or 16.51 per cent; inadequate in 86, or 78.90 per cent; and questionable in 5, or 4.59 per cent.

Alcoholic beverages. Eighty-six, or 78.9 per cent, said they did not drink. Three, or

2.75 per cent, were moderate drinkers; 6, or 5.51 per cent, were excessive drinkers. Fifteen, or 13.76 per cent, were indefinite. Here, as in other endemic areas of pellagra, alcohol plays a very minor role, as contrasted with reports from northern clinics.

Excreta Disposal	*Number of Cases*	*Percentage*
Water borne sewage, plumbing good	68	62.39
Water borne sewage, plumbing defective	5	4.59
Sanitary privy	16	14.68
Unsanitary privy	13	11.92
Indefinite	7	6.51

Our findings, therefore, show nothing to support the theory of the Thompson-McFadden Pellagra Commission that the spread of pellagra is due to unsanitary excreta disposal.

Screening	*Number of Cases*	*Percentage*
Good	50	45.87
Fair	11	10.09
Poor	18	16.51
None	17	15.60
Unspecified	14	12.84

There were *contacts or a family history of pellagra* in 60 cases, or 55.05 per cent. Thirty, or 27.52 per cent, were negative, and 19, or 17.43 per cent, were indefinite.

Physical findings:

General Nutrition	*Number of Cases*	*Percentage*
More than 40% underweight	3	2.75
More than 30% underweight	8	7.25
More than 20% underweight	33	30.28
More than 10% underweight	70	64.22
Normal weight	29	26.61
More than 10% overweight	7	6.42
More than 20% overweight	3	2.75
Alimentary tract:		
Red beefy mouth or tongue (far more complained of a sore mouth subjectively than showed the typical beefy red color)	10	9.17
Exceptionally bad teeth (nearly all patients needed dentistry)	10	9.17
Abdominal tenderness (usually epigastric)	25	22.94
Nervous System:		
Knee jerks exaggerated	10	9.17
Knee jerks sluggish	3	2.75
Knee jerks absent	1	0.91
Intention tremor	1	0.91
Ataxic gait	1	0.91
Tremor of hands and feet	1	0.91

Treatment given. All patients were instructed as to dietary measures by the social service worker, and the most economic way of employing these was considered. In addition to this, 81 cases, or 74.31 per cent, were given nicotinic acid; 24, or 22.02 per cent, were given yeast; 5, or 4.59 per cent, were treated by diet alone; and one patient was given hydrochloric acid. In 6 patients, or 5.50 per cent, yeast was found superior to nicotinic acid. All patients who took treatment faithfully showed prompt improvement on either nicotinic acid or yeast, so far as their pellagrous symptoms went. Many had non-pellagrous symptoms in addition, which naturally showed no improvement. Two cases showing peculiar reactions to treatment were noted. One patient said that every time she took yeast her feet would break out in an eruption. This seemed to be true, but nicotinic acid solved the problem. Another patient said that nicotinic acid seemed to cause a swelling of the hands and feet, which cleared up on yeast. I have no explanation of these phenomena, unless they were on an allergic basis.

Recommendations: In general, the treatment given seemed adequate for the pellagra *per se.* While there was usually some gain in weight under the treatment, this was not as striking as one would wish. I believe the explanation is to be found in the poverty of the patients, which prevented them from getting an adequate diet. If more funds could be secured to help the deserving unfortunates among the clinic patients to get better food, still more good would be done. The great prevalence of bad teeth, and the statement of many that they were financially unable to go to a dentist, suggest the necessity for a full-time dentist in our public health department.

The Patient's Need of Guidance: Many a patient, after going the rounds of the specialists, has found relief in mental healing or New Thought or Christian Science, because he lacked the guidance of a sound general practitioner who understood his physical condition, his nervous temperament and knew the details of his daily life. And many a patient, who on his own initiative has sought out specialists, has had minor defects accentuated so that they assumed a needless importance, and has even undergone operations that might well have been avoided.—Peabody, Francis W.: Doctor and Patient, New York, The Macmillan Company, 1939.

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AS OTHERS SEE US

One of the great pleasures of editing the North Carolina Medical Journal is that of seeing the other state journals that come to the editorial desk. A number of these journals have spoken so kindly of the newcomer in their midst, and have given it such a hearty welcome that it is already beginning to feel at home in the family of state journals.

Since the North Carolina Medical Journal belongs to the entire membership of the State Society, it is only just to its readers that they know something of the warmth of the welcome extended by other state journals. For this reason, we are giving excerpts from a few of the cordial greetings that have been extended.

Dr. E. A. Hines, the veteran editor of our southern neighbor, *The Journal of the South Carolina Medical Association*, wrote a cordial letter, in addition to giving us the leading editorial, from which the following passages are quoted:

"Volume 1 and number 1 of the new official organ of the Medical Society of the State of North Carolina is off the press and it is indeed a creditable first number and as was to be expected is in keeping with the high standards of the practice of medicine in North Carolina. The format is attractive, simple, and dignified . . ."

"The Journal of the South Carolina Medical Association extends most cordial greetings to this new comer in the field of medical journalism from the sister state of North Carolina."

In the November number the *Virginia Medical Monthly* anticipated our first issue—perhaps fearing the worst!—with a welcoming editorial and much good advice. This was followed after our first issue by a friendly note of commendation from Miss Agnes Edwards, the business manager.

Likewise, the *Illinois Medical Journal*, edited by the brilliant veteran, Dr. C. J. Whalen, extended a cordial welcome in its December issue.

The *New York State Journal of Medicine*, in its issue for February 15, honors us with its leading editorial, from which excerpts are taken:

"The *North Carolina Medical Journal*, whose first issue appeared in January, promises to make a distinguished contribution to medical journalism. Its attractive format shows a thorough understanding of the technical aspects of magazine-making. More important, its contents reveal a keen awareness of the functions and responsibilities of a state medical journal.

"It is not enough for a state journal to act as a medium for the dissemination of scientific papers. That is part of its function, and an important part, but by no means all.

"A state medical journal must educate in the broadest sense of the word. It must educate by a discriminating selection of the scientific articles it publishes. It must educate by a constant broadening of medicosocial consciousness in the profession.

"The *North Carolina Medical Journal* apparently intends to do both. Its first issue contains a number of superior scientific articles. Its leading article, 'The Doctor and Socialized Medicine,' by J. Buren Sidbury, M.D., furnishes an excellent analysis of one of the leading medicosocial problems of our times."

. . . "Dr. Sidbury's article proposes concrete remedies for concrete ills. He accepts the principle of federal financial aid to provide medical care for the underprivileged but defines the conditions under which such aid is acceptable and produces the best results. At the same time he debunks much of the propaganda for state medicine. If his article reflects the policy of the *North Carolina Medical Journal*, this newcomer seems destined to assume an important place among state medical publications."

Other state journals greet us as follows:

Journal of the Michigan State Medical Society:

"THE JOURNAL of the Michigan State Medical Society congratulates the Medical Society of the State of North Carolina on its newly established *Journal* . . . The first number indicates that the new journal will take its place among the leading medical publications of the United States. Our best wishes to Dr. Johnson and assurance of complete co-operation of our staff."

Northwest Medicine:

"With few exceptions all of the state medical associations either publish their own monthly journals or are grouped with proper representation in a united publication. The latest addition to this list is the *North Carolina Medical Journal*, the official organ of the Medical Society of the State of North Carolina. . . . The journal presents an attractive appearance, being set up along lines characteristic of a well established publication. Editorials are on timely subjects, and the articles discuss problems of vital interest to the profession. This publication is welcome into the family of state medical journals."

The Mississippi Doctor:

"We are delighted to welcome to our desk the *North Carolina Medical Journal* which comes as Vol. 1, No. 1 . . . It emerges with sixty-four pages of reading matter and a fine lot of advertising. J. Buren Sidbury, of Wilmington, leads with an able discussion on "The Doctor and Socialized Medicine." Dr. Rock Sleyster, President of the American Medical Association, Dr. Nathan Van Etten, President-elect, Dr. Fishbein, and Dr. Olin West, join in with their most cordial greetings. If No. 1 is to set the pace, then North Carolina is to have a very fine journal."

Delaware State Medical Journal:

"We have before us Volume 1, Number 1, of the *North Carolina Medical Journal*, dated January 1, 1940, and we welcome it into the ranks of the State Medical Journals. An excellent issue is this first one, containing sixty-four pages of text, sixteen pages of advertising, and four pages of announcements . . . The Presidential Address of Dr. J. Buren Sidbury, of Wilmington, on 'The Doctor and Socialized Medicine', is an excellent and sane discussion and well deserves its position of leading article."

Connecticut State Medical Journal:

"The Connecticut State Medical Journal no longer remains the youngest member of the family of state medical journals. In January of this year appeared the North Carolina Medical Journal, the official organ of the Medical Society of the State of North Carolina. As in our own case, this new journal replaces the Annual Proceedings of that particular Society. . . . We extend a hearty welcome to the North Carolina Medical Journal, to Doctor Johnson and to his editorial board. We covet for this new journal a long life of usefulness to its Society."

Pennsylvania Medical Journal:

"In January, 1940, a new journalistic baby was born in the form of the *North Carolina Medical Journal. . . .*"

"THE PENNSYLVANIA MEDICAL JOURNAL, now in its forty-third year, wishes to congratulate the North Carolina Society on taking this forward step that will undoubtedly promote organized medicine in North Carolina.

"To Dr. Johnson and his associate editors we extend congratulations on the fine journal that they have produced."

Medical Annals of the District of Columbia:

"An attractive publication has been added to the family of state medical journals. The first issues of *The North Carolina Medical Journal* have been received at the Society's office. Its editorial staff is to be commended on a splendid journal. Not only are the scientific articles of unusual interest but typographically it has much to commend it. Editors of the MEDICAL ANNALS extend their congratulations to the North Carolina Medical Society on their new journal."

And last, but by no means least, our own *Southern Medicine and Surgery:*

"Number 1, volume 1, of the new *North Carolina Medical Journal* came to this desk since the publication of our last issue. . . . It is a highly creditable production. . . ."

"The essays are well chosen to cover a number of important pathological states. The editorial expression covers the purposes and scope of the journal. The advance tributes paid on faith are but the harbingers of the unstinted praise that must be paid later for work well done. . . ."

* * * *

"THE MOST IMPORTANT THING"

The Forum for March contains an article entitled "I Can't Afford to Be Sick", which should be read by everyone who advocates regimenting the medical profession. It records the medical experience of the anonymous mother of two children, whose husband, a highly paid sales manager prior to the depression, lost all his savings in a bank failure in 1930 and soon afterwards became crippled with arthritis. In their prosperous days they had well-known doctors, paid them well, and got good service. In the dark days after the crash, she and her family patronized first a very young private doctor whose charges and whose ability were both low. Later they went to public dental clinics, eye clinics, orthopedic clinics, the children's hospital ward, and a government naval hospital. All of these were repulsive to this gently-bred woman, and the results obtained were unsatisfactory.

As a result of her contact with the socialized type of medical care, this woman concludes: "My experience casts a white light on the problem of state or group medical care. I see clearly that the most important thing is to preserve, somehow, the principle of competition for the patient's favor. The doctor who can deliver the goods professionally and personally must get the business as he does now. His confreres who are starving now must continue to starve, in the best interest of society."

It is quite significant that this highly intelligent woman should have recognized the importance of a principle for which organized medicine has been contending so long. While the advocates of political medicine profess great concern over security for the doctor, they overlook the danger that their kind of security for the doctor may mean insecurity for the patient.

* * * *

THE ABUSE OF THE SULFONAMIDE COMPOUNDS

New remedies, if they had the power of speech, would very probably beg to be spared from the excessive enthusiasm of their medical admirers. The tremendous curative power of sulfanilamide and sulfapyridine, with allied compounds, should not lead us to expect them to cure everything, and should not blind our scientific vision to the possible harm they may do. Unquestionably there has been a tendency to use these preparations—especially sulfanilamide—entirely too freely, if not recklessly. In the *Journal of the American Medical Association*, for March 16, Rhoad and Afremow report their experience with the use of sulfanilamide in 31 cases of sore throats in which hemolytic streptococci were found, compared with 36 control cases treated under similar conditions, but without sulfanilamide. Both pharyngitis and tonsillitis were included in the series. Their conclusion was that sulfanilamide "was not found to reduce the severity of the symptoms, shorten the period of incapacity, reduce the incidence of complications or reduce the duration of the carrier state. Toxic manifestations of the drug other than the usual cyanosis occurred in one half of the cases in which sulfanilamide was administered. In a few instances these reactions were serious enough to cause genuine concern.

"It is not wise to make sweeping generalizations on the basis of one series of controlled cases. Sulfanilamide is a drug of proved value in severe infections of deep structures due to the hemolytic streptococcus. However, in the average uncomplicated case of tonsillitis or pharyngitis due to hemolytic streptococci the advisability of its routine use is questionable. Certainly no physician should be censured for withholding the drug in these conditions unless complications such as severe cervical adenitis, paranasal sinusitis, otitis media, mastoiditis or meningitis supervene."

CASE REPORTS

DUKE HOSPITAL CLINICO-PATHOLOGICAL CONFERENCE

November 8, 1939

Dr. David T. Smith (reading the clinical summary):

The patient, a fifty-one year old white grocery salesman, was admitted because of fever of six weeks' duration.

Past History: The patient's general health had been good until the present illness. He had Cuban fever in 1899, which lasted for two or three weeks. He had two penile sores at the age of seventeen, with bilateral enlargement of the inguinal nodes. Concomitantly he had pain on urination and urethral discharge. He was treated with iodides, mercurials and intra-urethral medications, and recovered in a few weeks without sequellae. Blood Wassermanns taken thirty and fifteen years previously were reported negative.

Present Illness: Four months before entry, the patient began to feel generally below par, and slightly feverish, with a few chilly sensations. Thinking he had malaria, he gave himself a course of atabrine, following which his skin turned yellow. Subsequently he visited his physician, who gave him a course of quinine, without improvement in his symptoms. About six weeks before admission, he developed a severe cold and cough, productive of about 30 cc. of thick, yellow, foul-smelling sputum which was occasionally blood-streaked. For his cough, his physician prescribed a syrup containing codeine and iron. He continued to have a slight fever. Several sputum examinations done by the State laboratory were reported as negative for acid-fast organisms. For two weeks prior to entry the patient had had his temperature taken daily. It ranged from 100 to 102°F. He continued weak, lost his appetite, had night sweats and frequent chilly sensations without frank shaking chills. Four days before entry he noted that his ankles were swollen, slightly reddened, and painful; also that there were several small, erythematous areas over the patellar regions. Two days before entry he was examined by fluoroscope and told that he did not have tuberculosis. Sputum examinations for acid-fast bacilli were reported as negative at this time. For about two days before entry his cough had almost completely subsided. He lost approximately twenty pounds in weight during his six months' illness.

Physical Examination: The temperature on admission was 39°C.; pulse was 104; respirations, 22, and blood presure, 126/70. The patient was a fairly well nourished, chronically ill, middle-aged white man. The eyes were bright; the skin pale; and there was no cyanosis or icterus. Several small, red, non-tender papules were present over the knees. These areas blanched on pressure. Mucous membranes were pale. The teeth were in good repair, and the gums showed only minimal gingivitis. There was general enlargement of the lymph nodes. The trachea was in the midline, without tug. The thyroid was not enlarged. The lungs were essentially clear to percussion and auscultation. No rales were heard. The abdomen was negative. The liver and spleen were not felt. Both ankle joints were slightly swollen and red. They were tender and painful on both active and passive motion. The remainder of the examination was not remarkable.

Accessory Clinical Findings: Blood Wassermann and Kahn were negative. The hemoglobin was 9 grams or 58 per cent. Red cell count was 3,260,000, with a color index of .89. White cell count was 5,640; polymorphonuclears, 60 per cent; large lymphocytes, 12 per cent; small lymphocytes, 24 per cent; 4 monocytes. *Urine:* Specific gravity varied between 1.012 and 1.024. There was occasionally a trace of albumin, and an occasional white blood cell and small granular cast. Repeated stool examinations were negative. X-ray the day after entry showed generalized bronchial thickening on the right, and a large mass of glands in the right hilum. On the left there was diffuse bronchial thickening. The changes about the right hilum suggested primary malignancy or hilar tuberculosis. Sputum examination was negative for acid-fast bacilli on eight different occasions. No fusiform bacilli were present in gentian violet stain, and no spirochetes were seen on dark field examination, at the time of admission. Sputum cultures were negative for fungi, and positive for staphylococcus aureus, on three occasions. Repeated blood cultures and agglutinations for all antigens used in the laboratory were negative.

Course in the Hospital: The patient remained in the hospital for ten weeks. He had almost continuous fever of 39 to 40°C. During the last two weeks, however, it was more remittent, occasionally dropping to 37 and 37.5°, and seldom going above 39. During the first three weeks, there was a relative bradycardia, the pulse rate ranging between 100 and 120; but during the last seven weeks of the illness there was a relative tachycardia, ranging from 130 to 140. There was persistent leukopenia; the highest white blood cell count during his stay was 6,800, and it ranged from that figure downward to 2,640 on the day of his death. There was usually a relative granulocytosis, with a rather marked shift to the left in the Schilling hemogram. The anemia was progressive in spite of transfusions and other usual supportive measures. The day before his demise the red cell count was 2,630,000; the hemoglobin was 7 grams or 49 per cent; color index, .9. White cell count was 2,240; segmenters, 21 per cent; stabs, 33 per cent; juvenile, 12 per cent; large lymphocytes, 12 per cent; small lymphocytes, 6 per cent. No malaria parasites were seen at any time. The patient's platelets were consistently low. On one occasion the platelet count was 13,000; on another, 45,000. X-rays of the ankle were negative. X-rays of the hands showed nothing to suggest Boeck's sarcoid. X-rays of the skull and long bones were negative. Bence-Jones protein was negative. Flat plate of the abdomen, G. I. series and barium enema were all negative. Bronchoscopic examination was negative. Examination of a small amount of purulent material obtained from the right bronchus was negative for acid fast bacilli. Cultures for fungi were negative. Staphylococcus aureus was cultured. Lipiodol injection of the lungs was done. There was no evidence of obstruction in either of the main bronchi. The findings suggested a lesion of the bronchus, and an epibronchial tumor was suggested by the roentgenologist. On the second day after admission to the hospital, the patient was seen by the visiting staff member, who noticed distant tubular breathing in the right interscapular region, between the third and sixth ribs. There was some suppression of breath sounds over the right lower lobes, and sticky inspiratory rales were heard posteriorly. The spleen was thought to be easily palpable, soft and non-tender. He thought that the disease picture might be due to chronic Friedlander's infection, bronchogenic carcinoma, Hodgkin's disease, or Boeck's sarcoid. A sternal puncture showed no plasma cells or other abnormal cellular elements. There was a depression of all hematopoietic elements. On one occasion the patient coughed up small clots which resembled tissue. The pathological laboratory reported these as mucus and normal squamous epithelium. The small erythematous areas observed on admission disappeared, and thereafter none were noted. The swelling and pain in both ankles also cleared. The suggestion of bronchogenic carcinoma or lymphosarcoma caused a therapeutic trial of x-ray. 1500 R. units were given over the chest during the third week of hospitalization. Re-examination of the chest by x-ray showed no decrease in size in the hilar shadows. It was thought that this would exclude lymphoma, but not carcinoma. During the fifth week of hospitalization, the patient developed an infection of the right cheek, which gradually increased in size. Numerous fuso-spirochetes were found in the infected areas. Because of this the patient was started on small does of Neoarsphenamine, but the infection continued to spread and involved almost the entire right cheek before his demise. In spite of supportive measures, the patient became progressively worse and expired on his sixty-ninth hospital day.

Discussion

Dr. Smith: This case presents an exceedingly complex clinical problem. However, it gives me the excuse to call to your attention two classical articles on the diagnosis of obscure fevers. These articles appear in the Johns Hopkins Hospital Bulletin, 58: 109 and 307, 1936. The first is on diagnosis of mild low-grade unexplained fever, and the second on high unexplained fever. Both of these reports are by Drs. Louis Hamman and Charles W. Wainwright of Baltimore.

I have listed here nine somewhat unusual points in this story. We must explain all of these nine points before we can hope to come to a satisfactory explanation of the disease in this man. Four months before admission there began (1) a febrile disease which was mistaken for malaria. Six weeks before admission there occurred (2) an acute respiratory infection with yellow sputum which was reported as "foul". Yellow sputum is usually produced by staphylococcus aureus and is not foul. Four days before admission he had (3) red swollen ankles with erythema. We have to explain (4) the persistent neutropenia with non-segmented polymorphonuclear cells and the absence of the cells which would justify the diagnosis of leukemia. There were (5) glands in the right hilar region, (6) a spreading pulmonary lesion, (7) an enlarged spleen and (8) a continuous high fever (39-40°C.) with a bradycardia followed by tachycardia. Finally, we must explain (9) the gangrenous lesion of the face.

The last point is easily explained. The patient had a fuso-spirochetal abscess with terminal gangrene of the right cheek because of poor tissue resistance resulting from his disease.

Did the patient have malaria? I do not think he did, because he was well treated by his family physician and was examined thoroughly here, and no malaria parasites were found. His clinical course is not consistent with malaria.

Did the patient have a chronic progressive staphylococcus infection? Such an infection might explain the original febrile period, when he was coughing up yellow sputum; the progressive pulmonary infection; the swollen ankles; the erythematous areas; the neutropenia with increased young polymorphonuclear leukocytes; and the enlarged spleen. The chief point against this diagnosis is the fact that he had strikingly large glands in the hilum at a time when there was very little disease in the periphery of the lung. I don't recall ever seeing large pyogenic glands in the hilum in cases of staphylococcus abscesses of the lungs or in generalized staphylococcus septicemia.

In view of the ecchymoses on his knee and the joint involvement, we have to consider meningococcemia and gonococcemia. We are justified in ruling out these infections, first, because the blood cultures were negative, and second, because neither of these infections produces progressive localized disease of the lungs and hilar glands.

Aleukemic leukemia, with a secondary staphylococcic infection, must be considered. I would like to ask if the sternal bone marrow was carefully studied.

Dr. Oscar C. Hansen-Pruss: There were no abnormal cells in the bone marrow.

Dr. Smith: Did the patient have brucellosis or Hodgkin's disease? Brucellosis is a common cause of unexplained fever, but the clinical course of this case is quite unlike that of chronic fatal brucellosis, and there is never marked enlargement of the hilar lymph nodes in this disease.

Hodgkin's disease would explain the mediastinal lymph nodes and even the secondary pulmonary involvement, but we must assume a secondary infection with staphylococcus to explain the sputum and continuous fever. While Hodgkin's disease may be limited to the mediastinum, it is more usual to have some other groups of glands involved as well. The bone marrow showed no evidence of Hodgkin's tissue, and I feel the patient's course was too stormy to be explained by Hodgkin's disease, even with secondary infection.

The slow pulse and high fever would suggest typhoid fever, but I do not think this is typhoid fever. It is hard to understand how typhoid could cause the change in the chest.

Hypernephroma might explain the neutropenia, enlarged spleen, metastatic involvement of the lungs and mediastinal glands. The patient was much more toxic than we would expect from hypernephroma, and the failure to respond to x-ray therapy eliminates this diagnosis.

Although the patient has a history of syphilis, his extensive pulmonary involvement and acute toxic course is inconsistent with a diagnosis of syphilis.

Did the patient have a primary carcinoma of the bronchus? (X-rays shown) His first film shows definitely enlarged glands of the right hilum. Later films show extension to the lung on the right and enlargement of the mediastinal nodes on the left. The lipiodol injection shows some narrowing of the bronchi, but this is not typical of carcinoma. Although the bronchoscopic examination failed to reveal a tumor, this does not of itself rule out such a tumor. The involvement of the glands on the left is against a primary carcinoma on the right. One cannot justify a diagnosis of primary carcinoma without assuming a severe generalized secondary infection which is much more extreme than one usually finds in cases of primary carcinoma of the lung.

Did the patient have a primary carcinoma of the stomach or intestinal tract with pulmonary metastasis? Such a diagnosis would explain the enlarged spleen and the pulmonary findings, but there was no evidence of a primary focus in the stomach or intestinal tract, and here again the clinical course of the disease suggests a severe generalized infection.

The one diagnosis which would explain all of the symptoms and signs is primary generalized tuberculosis. The spleen, glands, and joints are not usually involved in reinfection or adult type of tuberculosis. Primary generalized tuberculosis occurs more often in children than in adults, and more frequently in negroes than in whites; but there are a surprising number of adult whites in North Carolina who have never had a primary infection with the tubercle bacillus. Most primary infections are asymptomatic and progress to healing, but occasionally an adult proceeds from the primary on to a generalized disease and dies in three to six months from the time of infection. A diagnosis of primary generalized tuberculosis would explain all of the unusual points in this case (see above). The bradycardia followed by tachycardia could be explained by enlarging tracheobronchial glands which first involved the vagus nerve producing bradycardia and later paralyzed the nerve by increasing pressure and thus releasing this inhibiting factor. This type of neutropenia is frequently seen in fatal cases of tuberculosis. The absence of the tubercle bacilli in the sputum is not at all unusual in primary generalized tuberculosis.

Dr. Roger D. Baker: Would you like to list your diagnosis in a differential fashion with tuberculosis first?

Dr. Smith: Well, I'd say that tuberculosis would adequately explain all of the symptoms and signs. I cannot, however, be sure that this is tuberculosis, and I would offer the following list of possibilities:

1. Tuberculosis
2. Metastatic carcinoma from some unknown origin
3. Primary bronchogenic carcinoma
4. Hodgkin's disease
5. Aleukemic leukemia
6. Myelogenous leukemia.

Dr. Robert J. Reeves: It is unusual to see a primary carcinoma spread so rapidly in the lungs.

Dr. Hansen-Pruss: I saw the patient very soon after he came into the hospital. I was very much impressed by the febrile course and intoxication. My first impression was that this man had a pyogenic infection of some sort with pyemia, the other possibility being tuberculosis. Leukemia of any type is ruled out by the myelophthisic type of bone marrow. The striking degenerative shift in the hemogram with a persistent leukopenia is definitely unusual in uncomplicated miliary tuberculosis—more so, if it is accompanied by a progressive aregenerative anemia and thrombopenia. Such findings, however, could be caused by secondary staphylococcus infection with the attendant intoxication. If this patient had miliary tuberculosis, such a complicating infection must be expected to explain the peripheral blood and bone marrow picture. The relative granulocytopenia was observed only on one occasion and was followed later by the relative granulocytosis reported above. The striking decrease in the absolute number of lymphoid cells suggests a markedly destructive and extensive involvement of the lymphoid system including the spleen, and, in that sense, is compatible with Dr. Smith's impression that this patient had miliary tuberculosis.

Dr. Smith: In generalized tuberculosis the spleen would be palpable and there would be generalized involvement of the lymph nodes.

Dr. William Schulze: The patient had a secondary infection, which could explain the large spleen.

Dr. James B. Bullitt: How do you explain the metastasis to the ankles, if this was tuberculosis?

Dr. Smith: I would explain both the swollen ankles and the erythema of the skin as a part of the generalized spread of tuberculosis through the body.

Dr. Schulze: The diagnosis was a puzzle to those of us who were caring for the patient. From the x-ray report we had tuberculosis or carcinoma to consider. Since many were in favor of bronchogenic carcinoma, Dr. Hart was consulted about biopsy and possible removal of a tumor, but the patient was too sick.

Dr. Baker (presenting autopsy findings): This case still presented a diagnostic problem after the gross autopsy was performed. Not until microscopic sections were available were we certain of the true nature of the process. But gross examination narrowed down the probabilities to tuberculosis (or some rare fungus condition simulating tuberculosis), and Hodgkin's disease.

At the time of autopsy each pleural cavity contained over a liter of slightly turbid straw-colored fluid. The infection of the face could not be adequately studied because of its location but it seemed to be fuso-spirochetal in nature and not related to the essential disease process except as a terminal event, resulting from the debilitated condition of the patient.

The lungs, as you see, contain no cavities. In the right lower lobe lies a yellowish gray consolidated region as big as a fist. The bronchi here are ulcerated and contain yellowish material. Throughout both lungs are evenly distributed, yellowish nodules 0.5 cm. in diameter, and 1 to 2 cm. apart. The tracheal mucosa shows numerous ulcers nearly 1 cm. in diameter. The lymph nodes at the hila are enlarged, firm and yellowish, and higher up encircle the trachea. Individual nodes are 2 to 3 cm. in diameter, and the whole mediastinal mass is the size of a fist. The mucosa of the lower small intestine and of the large intestine is normal.

The spleen is about four times normal size (470 grams). The cut surface shows yellowish nodules up to a centimeter in size. Similar nodules are noted in the liver, kidney and heart muscle. About the head of the pancreas are large yellowish lymph nodes like those in the mediastinum.

The gross material is thus suggestive of tuberculosis, but cases of Hodgkin's disease are available with the same splenic appearance, and with tracheal ulceration much like that seen here.

Microscopically (with projection of slides) a review of the material obtained during life at bronchoscopy shows only mucus and surface epithelium. Even with the knowledge gained from the autopsy we could go no further in interpreting the biopsy.

The significant fact in the case is that acid-fast bacilli were stained in sections of the main lung lesions and in the numerous yellowish nodules of the lungs and spleen, and even in a tubercle of the thyroid gland. The tissue reaction is that of tuberculosis. The tubercles are in general fresh with much caseation and only moderate fibrosis. No very old or calcified lesions are present. Sections indicate that the tracheal ulcers are definitely tuberculous, as is the pleural exudate.

The case is, therefore, one of tuberculosis, but it is not the usual adult kind of tuberculosis with predominant involvement of the apices of the lungs by nodules or cavities. It is, rather, what one finds in a primary infection in childhood. Apparently the patient was infected with the tubercle bacillus only a few months before his death. The caseous pneumonia of the right lower lobe represents the primary focus. This spread to the hilar nodes, producing a mediastinal mass of tuberculous glands. Hematogenous spread occurred to an extent justifying the term miliary tuberculosis.

The absence of a cavity is to be correlated, probably, with the failure to find tubercle bacilli in the sputum. Bronchoscopic examinations repeated at the very last part of the patient's course, with recovery of characteristic material from the tracheal ulcers, might have permitted a clinical diagnosis. But it is to be recalled that the patient was very ill towards the close, and had gangrene of the face.

In retrospect, the very large spleen is perhaps the most helpful clinical feature in differentiating carcinoma from tuberculosis; for one might expect a large spleen in miliary tuberculosis, but hardly in carcinoma, because the spleen is not often the site of metastases from a carcinoma. But one might argue that secondary infection in connection with bronchial carcinoma could produce an enlarged spleen, of the acute splenic tumor type.

Anatomical Diagnosis

1. Tuberculous pneumonia of the lower lobe of the right lung (primary focus).
2. Tuberculous ulcers of bronchi and trachea.
3. Mediastinal lymph node tuberculosis.
4. Miliary tuberculosis, most prominent in lungs, spleen and liver.
5. Sero-fibrinous tuberculous pleurisy.
6. Fuso-spirochetal gangrene of right cheek.

CLINICO-PATHOLOGICAL CONFERENCE

City Memorial Hospital

Winston-Salem

A forty-three year old man was admitted to the hospital with his clothes drenched with sweat.

The patient was well until five months before admission, when he began to have recurrent attacks of chills and fever. He was sure that his temperature often reached 103°F. During the chills he was often seized with vomiting. The chills came at intervals of five days to three weeks, but the patient continued his work as a farmer in the intervals, losing only one day's work at a time. Six weeks before admission he had lost 25 to 30 pounds in weight, and had become so weakened that he could no longer work. His teeth had been bad and he had been having them extracted sporadically. Since he had been ill he had become increasingly nervous and had had severe aching of his legs. Eight weeks before admission his eyesight gradually began to fail and he occasionally had diplopia. He had not had any headaches, but two weeks after his sight began to fail he was dizzy for about two weeks. He knew that his blood pressure had been low for at least two months. He also complained of difficulty in starting the urinary stream, poor appetite, and shortness of breath from gaseous distention of his abdomen.

Physical examination revealed a very thin, emaciated, extremely ill man, looking much older than his given age. The skin was cold, pale and damp. There was slight lateral nystagmus. The pupils were small, equal and regular, and reacted to light and accommodation. There were no ocular palsies. Both optic discs were choked. Only one tooth was left in the mouth. The pharynx was red. The blood pressure was 95 systolic, 65 diastolic; and the heart sounds were faint. The lungs were normal. The abdomen was slightly distended with gas; the liver was slightly enlarged and there was some tenderness at the edge of the costal margin. The spleen was felt at times. The finger tips were cyanotic. The reflexes were normal.

The temperature on admission was 97.6°F. The pulse was 88 and the respirations, 18. An hour and a half later the patient had a chill and the temperature went to 103°F., the pulse to 142, and the respirations to 22.

Examination of the blood revealed a red cell count of 3,950,000, with 8 grams of hemoglobin (55%); and a white cell count of 18,900, with 73 per cent segmented polymorphonuclears, 15 per cent stab cells, 3 per cent juvenile cells, 1 per cent myelocytes and 8 per cent lymphocytes. No malarial parasites were found in the stained smear. The urine was amber, turbid, and acid in reaction, with a specific gravity of 1.019. It contained a few white cells and a few hyalin and cellular casts in a centrifuged specimen. One blood culture remained sterile.

The day after admission the patient had another chill, his temperature went to 101.4°F., his pulse to 132, and his respirations to 21. He complained of a stomach ache. This was due to distention, and was relieved by a rectal tube. The patient became irrational on the second day after admission. The blood pressure fell to 40 systolic, 0 diastolic; and the pulse became imperceptible. The temperature at this time was 104.4°F. The patient died three hours later.

Differential Diagnosis: This patient's stay in the hospital appears to be merely the closing chapter of a story which was none too well defined at any time. The main theme of the history is irregularly recurring chills and fever without any obvious cause. That these chills were severe is evidenced by the ensuing weakness, loss of weight, and secondary anemia. It is necessary to search for some cause for the chills and fever. Malaria can be excluded at once by the complete irregularity of the chills and the length of time between them, sometimes amounting to three weeks. Tuberculosis or the lungs is eliminated by the absence of cough and sputum and by the negative lung findings. A pyogenic infection of some region of the body would fit in with the history, as would repeated attacks of biliary colic. Against biliary colic is the entire absence of jaundice and pain in the abdomen. Many cases of gall stones run their course without ever having jaundice, but the particular type of trouble most likely to produce chills and fever —common duct stone with infection—almost always causes jaundice and colic.

A pyogenic infection remains to be considered. The total leukocyte count of 18,900, with the shift to immature cells, is certainly good evidence of this. Nothing in the history suggests where this might be, except the statement that there was difficulty in starting the stream on urination. The urine examination, however, is inconsistent with urinary tract infection, as the finding of only 8-10 white cells in the urine is insufficient evidence to indicate an infection of such duration and severity as this patient had.

The choking of the discs, the failing vision, and the dizziness may be taken as signs of intracranial pressure, but the history is certainly not typical of an intracranial lesion and no other neurological signs are present to substantiate this conjecture. The only other positive findings—tenderness at the costal margins and slight enlargement of the liver—direct our attention to the liver and gall bladder as the seat of the pyogenic infection. The gall bladder has been discussed and discarded as a possibility. Abscess of the liver and sub-diaphragmatic abscess must both be considered. A sub-diaphragmatic abscess does not occur ordinarily without some antecedent disturbance having a more or less definite history and physical signs. The duration of five months is also very much against a sub-diaphragmatic abscess. Abscess of the liver on the other hand is frequently painless and can be of as long duration as this illness was. It is true that abscess of the liver is commonly preceded by appendicitis, amebic dysentery or cholelithiasis, and there is no history of any of these. In spite of the absence of any antecedent demonstrable cause for the development of an abscess of the liver, I feel that this is the best probability of the lot. Chills and fever commonly accompany hepatic suppuration. It is frequently painless, and certain types have a duration of months. The leukocyte count implies a suppurative process. The anemia, weakness and dizziness, loss of weight and appetite all are well explained by low-grade suppuration of continued duration. The only localizing signs present are the enlarged, tender liver. My diagnosis is abscess of the liver.

Q. What do you consider the etiologic agent if you have ruled out amebae and intestinal organisms?

A. As to the cause of the abscess one cannot be very definite. Abscesses of the liver may be caused by a variety of organisms. The pyogenic variety generally gives an illness of much shorter duration and has an antecedent history. Endameba histolytica cannot be ruled out as the causative agent, because an amebic abscess of the liver may follow a sub-clinical amebiasis. We have had one such case here recently. Actinomycotic abscesses occur without any history of previous illness or other manifestations of disease. Where this man could have become infected with amebae is not evident.

Q. What caused the choked discs?

A. It has been stated that simple exhaustion is enough to cause papilledema, and this man was certainly exhausted.

Q. (By the pathologist) Did this man at any time have anything at all suggestive of appendicitis?

A. Aside from the vomiting, which was associated with the chills and fever, there was no history of anything of the sort, and there were no physical findings pointing in this direction.

Clinical Diagnosis

Septicemia.
Pyelonephritis.
Malignancy of brain (?)
Malignancy in right upper quadrant (?)

Presentation Diagnosis

Hepatic abscess.

Anatomical Diagnosis

Actinomycotic abscess of liver.
Impaction of gall stones in appendix with erosion of mucosa.
Generalized peritonitis.

Pathological Discussion

The autopsy showed an enlarged liver extending 8 cm. below the costal margin and adherent to the diaphragm by fibrous bands. In the right lobe there was an abscess 12 cm. in diameter just beneath the surface, which had ruptured a short time previously, resulting in an early generalized peritonitis. The wall of this abscess was composed of a thin outer layer of fibrous tissue which supported large villous masses and smaller reddish-gray soft masses which projected into the cavity. The abscess contained thick gray pus. There were numerous small areas of liver necrosis adjacent to the abscess. Sections of the wall of the abscess and of the areas of necrosis contained beautiful colonies of actinomyces, with the typical radiating clubbed ends, surrounded by an exudate of polymorphonuclear leukocytes.

The second item of interest is the appendix, in which were found incarcerated three gall stones, the largest one measuring 1 cm. in diameter, the other two 8 mm. and 6 mm. each. These stones were lying in two large transverse ulcers at the base of the appendix. It was impossible to expel the stones into the cecum. The gall bladder was normal in size and thin-walled. The bile ducts were dilated, thin-walled, and patent. The brain was normal; no abscesses or tumors were found, nor was there any other anatomical cause for the choked discs.

It is evident from the anatomical findings that the history obtained was not adequate. There must have been jaundice at the time the stones were passing through the bile ducts, and it seems only reasonable to suppose that after their incarceration in the appendix there would have been attacks of appendiceal colic. Sections of the appendiceal ulcers reveal the lesion as fairly acute, and it cannot be demonstrated that they were the point of entrance of the fungus. The size of the abscess and the similarity of the attacks, if the history is accurate, indicate that it was probably present from the first and was undoubtedly responsible for the chills and fever.

Actinomyces may enter the intestinal tract and pass through the wall without leaving any evidence of its passage, and first present itself clinically as an abscess of the liver. I believe that is what occurred in this case. The changes suggestive of increased intracranial pressure will have to be explained by exhaustion and toxemia.

EARLY SIGNS OF CANCER OF THE SKIN

1. Cancer of the skin is most often seen on the exposed surface of the body but may be located anywhere on the skin.
2. It may begin as a papule, warty or papular growth, or an ulcer with elevated rolled edges.
3. Another type of skin cancer may start as a thickening of the skin which forms scales or scabs; these scales often shed and are reformed.
4. There is a type of skin cancer that begins as a horn or spur.
5. Skin cancer often develops in scars.
6. Any mole or wart may become malignant from injury, infection or constant irritation.
7. Skin cancer may be multiple.
8. These lesions should be treated early by either irradiation, surgery, or electro-coagulation.

Cancer Committee of the North
Carolina Medical Society
H. B. Ivey
T. Leslie Lee
C. C. Carpenter.

SUBSTITUTION LIPOMATOSIS OF KIDNEY

Report of Case

Preston Nowlin, M.D., F.A.C.S.
Charlotte

Replacement of the kidney parenchyma by true adipose tissue is not infrequent. Kutzmann(1) in 1929 collected 35 cases. As he stated in his report, the condition is generally associated with long continued obstruction of the kidney, and in 75 per cent of his cases calculi were present. This substitution process follows destruction by infection; it is not neoplastic, and should be distinguished from renal lipoma.

Clinically the importance of substitution lipomatosis lies in the difficulty of distinguishing it from renal malignancy. This is due to the fact that obliteration of one or more calyces might occur in either condition, causing distortion of the urogram. The diagnosis is generally made only after exploration of the kidney under suspicion; but the condition should be considered wherever there is a bizarre urogram simulating neoplasm, together with calculus formation and infection.

Report of Case

Mrs. J. F. G., a white woman, aged sixty-nine, was first seen at the Nalle Clinic on October 2, 1939. Her chief complaint was "bilious attacks" with "gas and upset stomach".

Past History: The patient's health had been good up to the onset of the present illness. There had been no serious illness or operation.

Present Illness: For the past three years the patient had been having attacks of dull pain in the right upper abdomen and in the right flank. These attacks were accompanied by belching and mild nausea. There was no history of jaundice or clay colored stools. There had been a mild dysuria for several years, but no hematuria, nocturia, or urinary frequency of any note. She had lost thirty pounds in the last two years, but her appetite had been good. Her pain was dull in type, was not colicky, and was not affected by eating. It remained in the right hypochondrium and right flank, and did not radiate to the groin.

Physical Examination: The patient was a rather thin, somewhat emaciated elderly woman, who did not appear to be acutely ill. The temperature was normal, pulse 80, blood pressure 178/96. Examination of the chest revealed nothing of note except a slight cardiac enlargement. The lungs were clear and resonant. Examination of the abdomen revealed a large hard mass, irregular in contour, and about the size of a grape fruit, in the right upper abdomen. This mass moved with respiration and could be palpated distinctly from the liver margin. Pelvic examination was negative.

Laboratory Findings: Urinalysis (catheter specimen) showed a heavy trace of albumen, glucose negative; sediment showed many pus cells but no blood nor casts. Smears of the urinary sediment showed numerous B. Coli, but no tubercle bacilli. Her hemoglobin (Sahli) was 100 per cent. Blood urea nitrogen was 13.6 mg.

X-ray: There was a large calcified mass in the right kidney region which resembled a cast of the lower half of the kidney pelvis. X-ray examination of the chest was negative.

Urological Examination: Cystoscopy revealed a chronic cystitis. 7 F. catheters passed easily to both kidney pelves. Sterile pus-free urine was obtained from the left kidney; from the right there was no flow, but a few drops of cloudy thick pus could be aspirated by suction. Indigo carmine given intravenously appeared in three minutes from the left kidney in good concentration, while none could be aspirated from the right kidney after forty minutes.

A retrograde urogram showed a normal left kidney. On the right the calcified mass seen in the plain film was included in the pyelographic medium. The right ureter was displaced inward, and the superior and middle major calyces were not seen. The lower major calyx contained a large stone, and the minor calyces were blunted and dilated.

Preoperative Diagnosis: Renal stone in the right kidney; adenocarcinoma of the right kidney.

Operation: On October 14, 1939, under cyclopropane and ether anesthesia, a right nephrectomy was done through the usual lumbar incision, and a large pyonephrotic kidney was removed. An uneventful recovery followed and the patient was discharged three weeks after operation.

Pathological Report: (Dr. Wm. Summerville) "The specimen consists of a kidney measuring 10x6x4.5 cm. which is covered by considerable fatty tissue; the capsule is slightly thickened and adherent; the upper pole and calyces showed marked fibrous and fatty tissue replacement. In the lower major calyx there is a large irregular stone, and this portion of the kidney pelvis is dilated. No normal parenchyma is seen. Microscopically sections show fibrous and fatty tissue with a dense cellular infiltration. No normal kidney tissue is seen, but in some areas there are atrophic remnants of tubules."

Diagnosis: Pyonephrosis with calculus. Lipomatosis of kidney.

1. Kutzmann: Replacement Lipomatosis of the Kidney, Proc. of Ninth Meeting Clinical Soc. G. U. Surg., July 1, 1929.

USE OF PLAIN COTTON THREAD FOR SUTURE MATERIAL

WATSON WHARTON, M. D.

SMITHFIELD

The patient was a twenty-three year old white female primipara, who had a second degree laceration. The usual obstetric suture material was old and had lost its tensile qualities. No silk was available. Number 16 plain white cotton thread was taken from the spool and moistened with Tincture of Merthiolate. Three sutures were taken with this within the vaginal canal and two on the perineal surface. The usual post delivery care (pouring warm Cresol Compound solution over the perineum twice a day) was taken. Sutures inspected on the third postpartum day seemed to be holding well and were without any sign of infection. The sutures were removed on the tenth postpartum day. At that time there was no evidence of infection. The laceration seemed to have healed as well as if the usual obstetric suture material had been used. The patient was seen and examined again two months later, at which time the perineum was normal.

Vitamin Advertising and the Mead Johnson Policy

The present spectacle of vitamin advertising running riot in newspapers and magazines and via radio emphasizes the importance of the physician as a controlling agent in the use of vitamin products.

Mead Johnson & Company feel that vitamin therapy, like infant feeding, should be in the hands of the medical profession, and consequently refrain from exploiting vitamins to the public.

BULLETIN BOARD

FROM THE OFFICE OF THE SECRETARY

The program for the 1940 meeting of the State Medical Society has been completed. The Chairmen of the various Sections have done an excellent job. Our President, Dr. William Allan, is making an innovation in using members of our own Society rather than out-of-state men as guest speakers, and I am confident that this move will meet with approval.

Our scientific as well as our commercial exhibits are interesting, and it is hoped that the entire membership will visit all of them.

Having served as Secretary for three years, I am struck by the short length of time devoted to the deliberations of the House of Delegates. There are, under the present arrangement, but two sessions of the House; one evening and one afternoon. The evening meeting begins at eight o'clock; but at least one hour of this meeting must be devoted to organization. At the coming meeting there is one subject to be taken up which, if properly discussed, will take up all the time of the sessions. Therefore it appears that at all future meetings it will be necessary, in addition to the present sessions, to have the House of Delegates meet either early in the afternoon or in the morning of the first day, in order that the business of the Society may be dispatched without hurry and with proper deliberation.

All indications are that the coming meeting will be the largest in our history. In the event of an overflow, arrangements have been made with the management of the Carolina Hotel to have a complete list of all available rooms in private homes in Pinehurst and vicinity. Let's all join in making this our biggest and best meeting!

PROGRAM OF THE EIGHTY-SEVENTH ANNUAL MEETING OF THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

(All sessions will be held in the various convention rooms of The Carolina Hotel)

MONDAY, MAY 13, 1940

9:00 a.m.—Registration—North Carolina Public Health Association.
10:00 a.m.—Morning Session—North Carolina Public Health Association. (Ball Room)
2:00 p.m.—Afternoon Session—North Carolina Public Health Association. (Ball Room)
3:00 p.m.—Drive to State Sanatorium—Tea, Mrs. P. P. McCain's Residence.
6:30 p.m.—Evening Session—North Carolina Public Health Association. (Dining Room)
8:00 p.m.—House of Delegates Medical Society of the State of North Carolina. (Ball Room)
8:30 p.m.—"Keno" Pine Room, Carolina Hotel.

TUESDAY, MAY 14, 1940

9:00 a.m.—Woman's Auxiliary Executive Board Meeting. (Pine Room)
9:30 a.m.—First General Session—The Medical Society of the State of North Carolina. (Ball Room)
10:30 a.m.—Annual Meeting Woman's Auxiliary. (Pine Room)
2:00 p.m.—Section Meetings: Ophthalmology and Otolaryngology (Men's Card Room); Practice of Medicine (Ball Room); Surgery (Ladies' Card Room); Public Health and Education (Dutch Room).
2:00 p.m.—Woman's Auxiliary, Drive to Orchid Gardens, Knollwood, and to Matinee, Carolina Theatre, Southern Pines.
6:30 p.m.—Wake Forest Alumni Banquet. (Crystal Room)
9:00 p.m.—President's Reception.
10:00 p.m.—Annual Medical Society Ball; Freddy Johnson's Band, U. N. C.

WEDNESDAY, MAY 15, 1940

9:00 a.m.—Second General Session—Medical Society of the State of North Carolina. (Ball Room)
10:00 a.m.—Bridge. (Ladies' Card Room)
11:30 a.m.—Conjoint Session of the Medical Society of the State of North Carolina and the State Board of Health. (Ball Room)
2:00 p.m.—Section Meetings: General Practice of Medicine and Surgery (Ball Room); Gynecology and Obstetrics (Ladies' Card Room); Pediatrics (Men's Card Room).
2:30 p.m.—Last Session House of Delegates. (West Parlor)
5:00 p.m.—Third General Session, Medical Society of the State of North Carolina. (Ball Room)

SESSIONS OF THE HOUSE OF DELEGATES

May 13, Monday, 8:00 p. m. (Ball Room)
May 15, Wednesday, 2:30 p. m. (West Parlor)

PROGRAM OF GENERAL SESSIONS

FIRST GENERAL SESSION

Tuesday, May 14, 9:30 A. M.
(Ball Room)

1. Call to Order, T. W .M. Long, M.D., Chairman, Committee on Arrangements.
2. Announcements, T. W. M. Long, M.D., Secretary-Treasurer.
3. Presentation of the President, William Allan, M.D., Charlotte.
4. President's Address, William Allan, M.D., Charlotte.

5. Presentation President's Jewel to William Allan, M.D., by President-elect Hubert B. Haywood, Jr., M.D., Raleigh.
6. Report of Committee on Award of Moore County Medical Society Medal for Best Paper Read at 1939 Session and Presentation of Medal—
    Thurman D. Kitchin, M.D., Chairman, Wake Forest.
    I. H. Manning, M.D., Chapel Hill.
    Fred M. Hanes, Durham.
7. Report Obituary Committee:
    J. B. Cranmer, M.D., Chairman, Wilmington.
    Ben J. Lawrence, M.D., Raleigh.
    Paul H. Ringer, Asheville.
8. Address (Guest Speaker) F. B. Watkins, M.D., Superintendent, State Hospital, Morganton, N. C. "A Report on the Trend of Mental Disease in the Western State Hospital District of North Carolina." From Section on the Practice of Medicine.
9. Fred M. Hanes, M.D., Durham. "Sprue." From the Section on General Practice of Medicine and Surgery.
10. Arthur H. London, Jr., M.D., Durham. "The Aims of the Academy of Pediatrics in North Carolina." From Section on Pediatrics.

SECOND GENERAL SESSION

Wednesday, May 15, 9:00 A. M.
(Ball Room)

1. Thomas Leslie Lee, M.D., Kinston. "Our Efforts to Reduce the Morbidity of Child Bearing." From Section on Gynecology and Obstetrics.
2. Address (Guest Speaker) F. B. Davis, M.D., Greensboro. "The Operation of Blood Banks in the Small Hospital."
3. Address (Guest Speaker) John Elliott, Sc.D., and W. L. Tatum, M.D., Salisbury. "The use of Plasma as a Substitute for Whole Blood."
4. Roy Norton, M.D., Chapel Hill. "Twenty-Five Years Health Progress in North Carolina." From Section on Public Health and Education.
5. B. W. Fassett, M.D., Durham. "Headache." From Section on Ophthalmology and Otolaryngology.
6. D. B. Cobb, M.D., Goldsboro. "Appendicitis, the Two P's, and the Highest Mortality in the Civilized World." From Section on Surgery.
7. 11:30—Conjoint Session of the Medical Society of the State of North Carolina and the State Board of Health.

THIRD GENERAL SESSION

Wednesday, May 15, 5:00 P. M.
(Ball Room)

1. Report of House of Delegates.
2. Unfinished Business.
3. New Business.
4. Installation of President, Hubert B. Haywood, M.D., and President-elect by retiring President, William Allan, M.D.
5. Remarks by President and President-elect.
6. Adjourn sine die.

SECTION MEETINGS

SECTION ON OPHTHALMOLOGY AND OTOLARYNGOLOGY

Tuesday, May 14, 2:00 P. M.
(Men's Card Room)

T. C. Kerns, M.D., Durham, Chairman

1. T. C. Kerns, M.D., Durham (Chairman's Address)—"Evaluation of Tonsillectomy and Adenoidectomy."
2. F. O. Fay, M.D., Wilmington—"Prolonged Occlusion in Latent Phorias."
3. McLean B. Leath, M.D., High Point—"Headache: Discussions and Demonstrations of Some of Its Causes."
4. W. D. Farmer, M.D., Durham—"Sphenopalatine Ganglion Neuralgia."
5. Algernon Reece, M.D., New York (Invited Guest)—"Tumors of the Conjunctiva."
6. B. W. Fassett, M.D., Durham—"Headache." Before Second General Session.

SECTION ON SURGERY

Tuesday, May 14, 2:00 P. M.
(Ladies' Card Room)

D. J. Rose, M.D., Charlotte, Chairman

1. E. V. Benbow, M.D., Winston-Salem—"Subtotal Gastrectomy in Non-Responding Medically Treated Peptic Ulcer: Case Reports."
2. Harry Winkler, M.D., Charlotte—"Low Back Derangements with Associated Sciatica."
3. J. F. Robertson, M.D., Wilmington — "The Management of Some Common Conditions of the Rectum and Colon."
4. Robert W. McKay, M.D., Charlotte—"Fibrous Cavernosis (Peyronie's Disease)".
5. C. R. Monroe, M.D.; C. D. Thomas, M.D., and C. L. Gray, M.D., Pinehurst—"Thoracoplasty and Apiculosis."
6. E. S. Boice, M.D., Rocky Mount—"Mortality with Causes of Death in a Series of 916 Hysterectomies."
7. D. B. Cobb, M.D., Goldsboro—"Appendicitis, the 2 P's and the Highest Mortality in the Civilized World." Before the Second General Session.

SECTION ON PRACTICE OF MEDICINE

Tuesday, May 14, 2:00 P. M.
(Ball Room)

J. H. McNeill, Chairman, North Wilkesboro

1. J. Lamar Callaway, M.D., Durham, and Sherwood Barefoot, M.D., Durham—"The Diagnosis and Management of Chronic Eczematoid Dermatitis of the Hands." Discussion opened by Joseph A. Elliott, M.D., Charlotte.
2. T. W. Baker, M.D., Charlotte—"Experiences with Histaminase. (Torantil)." Discussion opened by C. Graham Reid, M.D., Charlotte.
3. M. D. Bonner, M.D., Jamestown—"The Use of the Bronchoscope in Pulmonary Diseases." Discussion opened by Charles Hartwell, M. D., Asheville.
4. A. L. Ormond, M.D., Black Mountain—"Artificial Pneumothorax Supplemented with the Phrenic Nerve Operation." Discussion opened by H. L. Seay, M.D., Huntersville.
5. Verne S. Caviness, M.D., Raleigh—"The Clinical Interpretation and Applications of the Electrocardiogram." Discussion opened by T. L. Umphlet, M.D., Raleigh.

6. O. Norris Smith, M.D., Greensboro—"The Treatment of Diabetic Coma with Limited Laboratory Aid." Discussion to be opened by Richard Z. Query, Jr., M.D., Charlotte.

7. F. B. Watkins, M.D., Superintendent, State Hospital, Morganton—"A Report on the Trend of Mental Disease in the Western State Hospital District of North Carolina."

SECTION ON PUBLIC HEALTH AND EDUCATION

Tuesday, May 14, 2:00 P. M.
(Dutch Room)

F. E. Willson, M.D., Chairman, Tarboro

1. W. P. Richardson, M.D., Chapel Hill—"Prevenception, the Health Department, and the Practicing Physician."—Discussion opened by Bayard Carter, Durham.

2. William L. Fleming, M.D., Chapel Hill—"Some Aspects of the Syphilis Control Program."

3. W. Z. Bradford, M.D., Charlotte—"The Practicing Physician's Part in Maternity and Infancy Care."

4. Harrell Brown, M.D., Chapel Hill—"Malaria."

5. Roy Norton, M.D., Chapel Hill—"Twenty-five Years Health Progress in North Carolina." Before Second General Session.

SECTION ON GYNECOLOGY AND OBSTETRICS

Wednesday, May 15, 2:00 P. M.
(Ladies' Card Room)

John C. Tayloe, M.D., Chairman, Washington

1. Richard L. Pearse, M.D., Durham—"Carcinoma of the Cervical Stump." Discussion opened by A. L. DeCamp, M.D., Fayetteville.

2. George M. Cooper, M.D., Raleigh—"Birth Control." Discussion opened by Oren Moore, M.D., Charlotte.

3. Robert Alexander White, M.D., Asheville—"Maternal Welfare as Related to Some of the More Dangerous Complications." Discussion opened by Frank A. Sharpe, M.D., Greensboro.

4. G. Carlyle Cooke, M.D., Winston-Salem—"The Complete Gynecological Service with Present Status of Endocrine Therapy."

5. Wallace B. Bradford, M.D., Charlotte—"Endometriosis." Discussion opened by Ivan Proctor, M.D., Raleigh.

6. O. Hunter Jones, M.D., Charlotte—"Forceps Delivery." Discussion opened by G. W. Johnston, M.D., Wilmington.

7. Thomas Leslie Lee, M.D., Kinston—"Our Efforts to Reduce the Morbidity of Child Bearing." Before Second General Sesson.

SECTION ON PEDIATRICS

Wednesday, May 15, 2:00 P. M.
(Men's Card Room)

G. W. Kutscher, Jr., M.D., Chairman, Asheville

1. S. F. Ravenel, M.D., Greensboro—"The Art of Pediatrics."

2. D. L. Smith, Sr., M.D., Saluda—"The Science of Pediatrics."

3. W. C. Davison, M.D., Durham—"The Future of Pediatrics."

4. B. W. Roberts, M.D., Durham—"The Economics of Pediatrics."

5. Arthur H. London, Jr., M.D., Durham—"The Aims of the Academy of Pediatrics in North Carolina." Before the First General Session.

SECTION ON GENERAL PRACTICE OF SURGERY

Wednesday, May 15, 2:00 P. M.
(Ball Room)

C. S. Jones, M.D., Chairman, Cliffside

1. Chairman's Address.

2. H. C. Thompson, M.D., Shelby—"Gout."

3. J. A. Sinclair, D.D.S., Asheville—"Local Application of Sulfanilamide to Dental Lesions."

4. R. D. McMillan, M.D., Red Springs—"Emergency Treatment of Acute Heart Failure in General Practice."

5. J. Lamar Callaway, M.D., Durham—"Eczematoid Dermatitis of the Hands."

6. H. F. Easom, M.D., Sanatorium—"Pneumoconiosis."

7. H. M. Baker, M.D., Lumberton — "Snake Venom in the Relief of Pain."

8. Fred M. Hanes, M.D., Durham—"Sprue." Before First General Session.

NORTH CAROLINA PUBLIC HEALTH ASSOCIATION

Thirteenth Annual Meeting

Monday, May 13, 1940
(Ball Room)

President—A. H. Elliott, M. D., Wilmington
President-elect—J. W. Williams, M.D., Williamston
Vice-President—W. P. Richardson, M.D., Chapel Hill
Secretary-Treasurer—Roy Norton, M.D., Chapel Hill

PROGRAM

Monday Morning, May 13

A. H. Elliott, M.D., President, Presiding

1. 9:00 a.m.—Registration.
2. 10:00 a.m.—Call to Order
3. Invocation—Rev. A. J. McKelway, Presbyterian Community Church, Pinehurst.
4. Walter Wilkins, M.D., Raleigh—"The North Carolina Coordinated School Health Program." Discussion led by Mr. James P. Shifford, Superintendent of Education in Stanly County and S. B. McPheeters, M.D., Goldsboro.
5. George B. Patton, Assistant Attorney General, Raleigh—"Legal Problems of the Health Officer." Discussion led by J. H. Epperson, Durham.
6. J. C. Knox, M.D., Raleigh—"Evaluation of Present Regulations Regarding Quarantine, Isolation, Placarding and Reporting in the Control of Communicable Diseases." Discussion led by C. N. Siske, M.D., Waynesville and M. J. Roseneau, M.D., Chapel Hill.
7. Frank C. Smith, M.D., Charlotte—"Factors in Vision Testing of School Children." Discussion led by D. E. Ford, M.D., Washington.
8. Professor H. B. Gotaas, Chapel Hill—"Public Health Aspects of Swimming Pool Control." Discussion led by J. A. Whitaker, M.D., Rocky Mount and R. L. Carlton, M.D., Winston-Salem.

MONDAY AFTERNOON, MAY 13

(Ball Room) 2:00 P. M.

W. P. Richardson, M.D., Vice President, Presiding

1. L. L. Parks, M.D., Jacksonville, Florida—"Preparation and Value of Annual Reports." Discussion led by J. S. Anderson, M.D., Raleigh.

2. D. F. Milam, M.D., International Health Board—"The Nutrition Survey." Discussion led by Carl V. Reynolds, M.D., Raleigh.
3. T. G. Faison, M.D., Winton—"Planning the Small County Venereal Disease Program." Discussion led by G. M. Leiby, M.D., Washington, D. C., and L. Wallin, M.D., Wadesboro.
4. Business Session:
    1. Progress Report and Discussion of Retirement Plans.
    2. Discussion of Constitution and Affiliation with A. P. H. A.
    3. Other Committee Reports and Business.
    4. Election of Officers.

MONDAY EVENING, MAY 13

H. Lee Large, M.D., Member, State Board of Health, Presiding

1. 6:30 p.m.—Dinner.
2. President's Address—A. H. Elliott, M.D., Wilmington.
3. Address—Ben E. Washburn, M.D., Rutherfordton, formerly with the International Health Board.
4. Program by local entertainers arranged by John Symington, M.D., Carthage.

ALUMNI MEETINGS

Tuesday, May 14, 1940

1.00 p.m.—University of North Carolina Alumni Luncheon.

1:00 p.m.—University of Pennsylvania Alumni Luncheon.

6:30 p.m.—Wake Forest College Alumni Dinner (Crystal Room)
Address—C. C. Carpenter, Dean, School of Medicine, Wake Forest College—"Plans and Policies of the Bowman Gray School of Medicine", with a lantern slide demonstration of the new School and Hospital in Winston-Salem. Remarks, Thurman D. Kitchin, M.D., President, Wake Forest College. Wives of Alumni invited. No extra charge for those registered at the Carolina; others, $2.00 per plate.

WEDNESDAY, MAY 15, 1940

1:00 p.m.—Jefferson Alumni Luncheon.
No extra charge for Luncheon or Dinner Meeting for those registered at the Carolina; others, Luncheon Meetings $1.50 per plate and Dinner Meetings $2.00 per plate.

SCIENTIFIC EXHIBITS

Joseph A. Elliott, M.D., Charlotte, and David G. Welton, M.D., Charlotte. "Kodachrome Transparencies of Skin Eruptions." Space No. 5.

Division of Oral Hygiene, State Board of Health, Raleigh. "Mouth Health Teaching in the Schools." Spaces No. 7 and No. 8.

Joseph M. Hitch, M.D., Raleigh, and N. F. Conant, Ph.D., Duke Hospital, Durham. "Fungus Infections of the Skin and Mucous Membranes Occurring in North Carolina." Spaces No. 69, No. 70, No. 71, No. 72, No. 73, and No. 74.

T. F. Vestal, M.D., Raleigh, and Mrs. M. F. Trice, Raleigh. "Division of Industrial Hygiene." Spaces No. 1, No. 2, and No. 3.

NEWS NOTES FROM THE STATE BOARD OF HEALTH

In a radio broadcast over station WPTF, Mr. M. A. Taff, Jr., in charge of the Central Tabulating Unit of the State Board of Health, made the following statement:

"The physical make-up of the venereal disease population now under Central Tabulating Unit is as follows: 88.6 per cent of the population is colored, 11.0 per cent white, and 0.4 per cent Indian. 37.3 per cent is male and 62.7 per cent female. Last fall when I first spoke over this station about the C. T. U. I stated that it was—'expected that after the entire state is under the Central Tabulating Unit such rigid control can be effected for each venereal disease patient as to demonstrate to Washington and the rest of the nation that we in North Carolina are really making headway towards stamping out syphilis.' I now say that our demonstration has started."

In a radio broadcast on April 16, entitled "Spreading Health News", William H. Richardson stated that "during the past three years articles about the State Board of Health have been compiled and pasted in large scrap-books, in which there are, up to this time, approximately 435 large pages of solid reading matter which, in years to come, will furnish a complete and accurate history of the Board's activities during this period. News given out by the State Board of Health does not constitute propaganda, in the generally-accepted sense of that term. Public health is divorced from politics; it has no candidates to elect or defeat, no private interests to serve. The names of those associated with the various activities about which articles are written are given simply to identify the work that is being done. Often, no names whatever appear in news releases—when they refer to some broad subject which does not need to be associated with any particular division or individual."

* * * *

During the first quarter of 1940, there were 933 more deaths in North Carolina than occurred during the corresponding period of 1939, and only 325 more births, according to reports compiled by the State Board of Health's Vital Statistics Division, of which Dr. R. T. Stimpson is the director. Through March, there had been 19,056 live births in the State this year, as compared with 18,731 the first quarter of last year; while 1940 deaths numbered 9,334, as compared with 8,401 a year ago.

There have also been more deaths among infants under a year old this year and more maternal deaths. During January, February and March, 1940, 1,317 North Carolina babies under a year old died, as compared with 1,210 last year. The number of maternal deaths during the first quarter of 1940 was 111, as against 103 last year.

Influenza took a heavy toll during the first two months of 1940, but deaths from that cause were fewer in March. Through the first quarter, influenza claimed 543 North Carolinians, as compared with 302 through the corresponding period of 1939.

Pneumonia deaths for the 1940 period under consideration totaled 911, against 901 a year ago, showing only a slight increase.

* * * *

The death rate from typhoid fever here in North Carolina in 1914 was 35.8 per 100,000 population. Last year, it was only 1.3.

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The April number of The Health Bulletin, published by the North Carolina State Board of Health, is a laboratory number, devoted to the new Clarence A. Shore Laboratory building which was dedicated on February 21.

NOTES FROM THE SCHOOL OF MEDICINE, UNIVERSITY OF NORTH CAROLINA

The following new appointments to the faculty of the Division of Public Health have just been announced by Dr. Milton J. Rosenau, Director:

Dr. John Wright, formerly Director of the Division of Vital Statistics, Tennessee Department of Public Health, to be Research Professor of Epidemiology.

Dr. William P. Richardson, Associate Professor of Public Health Administration, in charge of Orange, Person and Chatham District Health Department.

Dr. Sterling Brackett, from the University of Wisconsin, Instructor in Public Health.

* * * *

Dr. Henry H. Kessler, from the Newark, N. J., Department of Health, lectured to the medical and public health students April 23 on "The Rehabilitation of the Industrial Worker."

* * * *

Dr. Wm. deB. MacNider attended the meeting of the American Philosophical Society in Philadelphia, and the National Academy of Science in Washington recently.

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Dr. W. R. Berryhill was recently elected a Fellow in the American College of Physicians and Dr. E. McG. Hedgpeth an Associate of the College.

NEWS NOTES FROM DUKE UNIVERSITY SCHOOL OF NURSING AND DUKE UNIVERSITY SCHOOL OF MEDICINE

On March 16, forty-three students in the first year class of the School of Nursing received their caps in an impressive ceremony in the Duke Hospital amphitheatre. The capping ceremony marks the completion of a student's probationary period and her acceptance as a full-fledged student nurse. Mr. F. Vernon Altvater, Superintendent of the Hospital, addressed the students.

On March 30, Dr. Richard Kovacs, Clinical Professor and Director of Physical Therapy at the Polyclinic Medical School and Hospital, New York City, gave an illustrated lecture at Duke Hospital on "Electricity in Medicine—Historical and Practical Aspects."

NORTH CAROLINA NEUROPSYCHIATRIC SOCIETY

The North Carolina Neuropsychiatric Society met in Winston-Salem at the Robert E. Lee Hotel on March 29. At the afternoon session Dr. E. A. MacMillan read a paper on "Acute Disseminated Encephalomyelitis", Dr. John C. George spoke on "Some Unusual Neurological Conditions (Spontaneous Subarachnoid Hemorrhage and Horner's Syndrome)", and Dr. Richard F. Richie gave a talk on "What Is Mental Hygiene". At the evening session, following the dinner, Dr. A. P. Noyes, Superintendent of the Pennsylvania State Hospital, spoken on "Personality and Psychosis".

FIFTH DISTRICT MEDICAL SOCIETY

Members of the Fifth District Medical Society were the guests of Dr. W. D. Jones at a fish fry held at Blewett Falls on April 25.

EIGHTH DISTRICT MEDICAL SOCIETY

The Eighth District Medical Society held its spring meeting on April 11 at the O. Henry Hotel in Greensboro. At 3:00 p. m. a symposium was held on The Early Signs and Symptoms of Cancer in:

the Esophagus—Dr. B. E. Rhudy
the Stomach—Dr. A. deT. Valk
the Bowel—Dr. H. L. Brockmann
the Bladder—Dr. C. O. Delaney
the Uterus—Dr. Moir Martin
the Breast—Dr. R. O. Lyday
the Bones—Dr. R. A. Moore.

This was followed by a general discussion and a business meeting for the election of officers. Officers elected for the coming year are: Dr. James McG. McAnally, president; Dr. P. W. Fetzer, vice-president; Dr. B. F. Cozart, secretary-treasurer. All are of Reidsville, which is the place selected for the fall meeting of the society. This year's officers, all of Greensboro, were J. T. Taylor, president; M. D. Bonner, vice-president; and J. Norris Smith, secretary-treasurer.

At the dinner meeting at 6:30 p. m., Dr. J. Shelton Horsley of Richmond gave an address on "The Principles of the Treatment and Handling of Cancer Patients".

NINTH DISTRICT MEDICAL SOCIETY

The Ninth District Medical Society held a symposium on Malignancy at the Vance Hotel in Statesville, on April 4. The following program was presented:

2:00 P. M.

"Diagnosis in Cancer"—Dr. T. V. Goode, Statesville.
Discussion: Dr. B. W. McKenzie, Salisbury
Dr. W. D. McLelland, Mooresville.
"Diagnosis and Treatment of Malignancy of the Cervix Uteri"—Dr. A. Hinson, Statesville.
Discussion: Dr. Verne Blackwelder, Lenoir
Dr. John C. Reece, Winston-Salem.
"Irradiation of Metastatic Malignancy" — Dr. J. Rush Shull, Charlotte.
Discussion: Dr. J. P. Rousseau, Winston-Salem
Dr. Milton Friedman, New York.
"The Responsibility of the Clinician in the Pathological Diagnosis of Tumors"—Dr. C. C. Carpenter, Wake Forest.
Discussion: Dr. Bivins Helms, Morganton
Dr. Alfred Blumberg, Asheville.

Dinner—7:00 P. M.

Toastmaster—Dr. James W. Davis

Guest Speaker—Dr. Milton Friedman, Radiologist, New York University.
Subject: "Benign and Malignant Tumors of the Breast"

Officers of the Society are Dr. W. H. Kibler, Morganton, president; Dr. W. D. McLelland, Mooresville, vice-president; Dr. J. R. Terry, Lexington, district councilor; and Dr. J. Sam Holbrook, Statesville, secretary-treasurer.

CAROLINAS-VIRGINIAS HOSPITAL CONFERENCE

The Tenth Annual Convention of the Carolinas-Virginias Hospital Conference, which is made up of the Hospital Associations of North and South Carolina, Virginia, and West Virginia, was held at Winston-Salem on April 4, 5, and 6. At the same time the North Carolina Dietetic Association and the North Carolina Association of Medical Records Librarians held associated meetings.

NORTH CAROLINA TUBERCULOSIS ASSOCIATION

The twentieth annual meeting of the board of directors of the North Carolina Tuberculosis Association was held at the Robert E. Lee Hotel in Winston-Salem on April 23. The annual report, read by the managing director and unanimously approved by the board, showed a decrease in the deaths from tuberculosis in North Carolina during 1939. There were 50.7 deaths per 100,000 population during the past year, as compared with 53.4 in 1938 and 138.2 in 1914—a decrease of 60 per cent in the last 25 years. The board recommended for the 1940 program a strengthening of the field service work and hearty cooperation with the medical profession, with state and local health groups, and with social agency departments, both official and non-official.

Officers elected were: Mrs. Charles E. Platt, Charlotte, president, succeeding Dr. P. A. Yoder; Dr. C. W. Armstrong, Salisbury, first vice-president; Dr. William H. Smith, Goldsboro, second vice-president. Frank W. Webster, Winston-Salem, was reelected managing director. Other members of the executive committee are: Dr. P. P. McCain, Sanatorium; Dr. S. D. Craig, Winston-Salem; Dr. John Donnelly, Charlotte; and Dr. P. A. Yoder, Winston-Salem. Dr. G. L. Rea of Charlotte, Dr. C. E. Howard of Goldsboro, Dr. S. M. Bittinger of Black Mountain, Dr. H. L. Seay of Huntersville, Mrs. Leonard White of Greensboro, and Dr. N. T. Ennett of Greenville were named as new members of the Board of Directors.

MECKLENBURG COUNTY MEDICAL SOCIETY

At the first April meeting of the Mecklenburg County Medical Society, held on April 2, Dr. Hamilton McKay spoke on "Retention of Urine, a Symptom Encountered in General Practice"; Dr. David Welton gave a paper on "Therapeutic Malaria in Central Nervous System Syphilis"; and Dr. J. M. Northington spoke on "Some Features of Health Care of the Aging". Papers presented at the meeting on April 16 were: "Uterine Dystocia", by Dr. Brodie Nalle; "Forceps Delivery", by Dr. Hunter Jones; "Bone Tumors", by Dr. Richard Baxter; and a Case Report on Siamese Twins, by Dr. Parker Hardin, of Monroe.

BUNCOMBE COUNTY MEDICAL SOCIETY

The Buncombe County Medical Society held two meetings in April. On April 8, Dr. S. Weizenblatt discussed "Strabismus, an Old Problem—a New Challenge". On April 15 Dr. Edgar F. Fincher, Associate Professor of Surgery at Emory University and one of the outstanding brain surgeons of the country, discussed the general subject of brain tumors.

FORSYTH COUNTY MEDICAL SOCIETY

At the regular monthly meeting of the Forsyth County Medical Society, held at the City Memorial Hospital in Winston-Salem on April 11, Dr. E. V. Benbow and Dr. G. C. Cook presented papers which they will read at the state society meeting. Dr. Benbow's subject was "Subtotal Gastrectomy"; Dr. Cook's paper was on "Sexual Inadequacy".

The Society voted to appropriate $102—a dollar per member—to the National Physicians Committee, in addition to private donations.

GUILFORD COUNTY MEDICAL SOCIETY

With Dr. Phillip B. Davis presiding, the Guilford County Medical Society held a short business meeting on April 11, following the meeting of the Eighth District Medical Society. The Society voted to donate $50.00 to the National Physicians Committee. The motion was carried that the May meeting be designated as a Dr. D. A. Stanton meeting in honor of the fifty-third anniversary of his practice. Dr. J. T. Taylor and Dr. W. F. Cole were recognized as honorary members. Members of the Greensboro Tumor Clinic were reappointed, with the addition of Drs. Ownbey, Rhudy and Matthews.

HALIFAX COUNTY MEDICAL SOCIETY

The Halifax County Medical Society held its regular meeting Friday evening, April 12, at 7:00 o'clock, at the Roanoke Rapids Hospital.

Dr. W. W. Green, of Tarboro, the guest speaker of the meeting presented a paper on "Treatment of Burns".

THERMAL BELT MEDICAL SOCIETY

The Thermal Belt Medical Society held a dinner meeting at the Marion Lake Club at Marion, N. C., on April 18. The following program was presented:

"Middle Meningeal Hemorrhage"—Dr. Paul McBee, Marion, N. C.

"The Gonorrheal Problem"—Dr. I. A. Phifer, Spartanburg, S. C.

"Sutures and Suture Material"—Dr. John Hamrick, Shelby, N. C.

"Maternal Health Program in Polk County"—Dr. Austin Woody, Tyron, N. C.

ANNOUNCEMENT FROM "INDUSTRIAL MEDICINE"

The Twenty-Fifth Annual Meeting of The American Association of Industrial Physicians and Surgeons, together with the First Annual Meeting of The American Industrial Hygiene Association, will be held at the Hotel Pennsylvania, New York City, June 4, 5, 6 and 7, 1940. This will be a four-day convention intensively devoted to the problems of industrial health in all of their various medical, technical, and hygienic phases, with particular stress on prevention and control of occupational hazards. Important programs have been prepared, and technical and scientific exhibits will be a feature of the convention. The dinner on Thursday evening, June 6, will be the occasion of the presentation of the Wm. S. Knudsen award for the year of 1939-40. The medical profession is not only invited, but urged to attend these gatherings, as they will be of unusual interest and value to all practitioners interested in industrial injuries and illnesses.

POST-GRADUATE COURSE IN OBSTETRICS

The University of Chicago and the Chicago Lying-in Hospital in cooperation with the Illinois State Department of Health and the Children's Bureau, U. S. Department of Labor, are offering a five to six weeks' postgraduate course in obstetrics. The only cost to the practitioners will be their board and room, incidental personal expenses, and a nominal fee of $15 for miscellaneous items. The number accepted for each course will be limited in order to maintain a more direct relationship between the general pratitioner and the staff.

Applications and inquiries should be addressed to: Postgraduate Course, Department of Obstetrics and Gynecology, 5848 Drexel Avenue, Chicago, Illinois.

ADVISORY COUNCIL ON MEDICAL EDUCATION

The following resolutions were unanimously adopted by the Advisory Council on Medical Education in February, 1940.

Inasmuch as the internship is now universally regarded as a part of the basic preparation for the practice of medicine and to be fully satisfactory must be integrated with the medical course proper, the Advisory Council on Medical Education recommends that the Association of American Medical Colleges in cooperation with national medical and hospital organizations and the Federation of State Medical Boards and state licensing bodies and after consultation with the Council on Medical Education and Hospitals of the American Medical Association should formulate minimum educational standards for the internship and should prepare a list of hospitals in this country which meet these standards.

Inasmuch as the internship is now universally regarded as a part of the basic preparation for the practice of medicine, the Advisory Council on Medical Education recommends to the Federation of State Medical Boards that an internship of not less than twelve months and of satisfactory educational content be required for admission to the state licensing board examinations in all states.

Basic Principles of the Internship

1. The internship should be regarded as a part of the basic preparation for either beginning the general practice of medicine or undertaking advanced training in a specialty.

2. The internship should provide a real educational experience and a period of clinical responsibility under supervision which aims to complete the clinical clerkship of the medical course.

3. The internship should be an important responsibility of the staff and be under the direction of those members who are competent to provide the necessary instruction.

4. The internship should be a joint responsibility of the medical schools and of those hospitals which can provide a satisfactory completion of the fundamental preparation for medical practice.

Believing that the public interest as well as that of the medical profession and of medical education would be served by a satisfactory method of interstate endorsement of licensure, the Advisory Council on Medical Education recommends to the Federation of State Medical Boards that all state licensing boards endorse without further examination the licensure of an applicant previously obtained by examination in another state whose standards of education and examination are not lower than their own, provided that the applicant is a graduate of a medical school in the United States and its possessions which at the time of his graduation was on the list of approved medical schools.

Recognizing the widening public, cultural and educational interests of medicine, the Advisory Council on Medical Education recommends to the Association of American Medical Colleges, the Association of American Universities and the Association of American Colleges that the college preparation for medical studies above the necessary grasp of the fundamental principles of biology, physics and chemistry should be devoted to general education rather than additional forms of preprofessional education.

NATIONAL GASTROENTEROLOGICAL ASSOCIATION

The Fifth Annual Convention of the National Gastroenterological Association will be held at the Hotel Roosevelt in New York City on June 4, 5 and 6, 1940.

Among those who will present papers during the three-day Scientific Session will be: Prof. J. D. Adamson, University of Manitoba; Dr. W. Wayne Babcock, Temple; Prof. B. P. Babkin, McGill; Dr. Anthony Bassler, New York, N. Y.; Prof. James H. Black, Baylor; Dr. Richard B. Cattell, Lahey Clinic; Dr. Isidore Cohn, L. S. U.; Prof. Charles A. Doan, Ohio State; Dr. Max Einhorn, New York, N. Y.; Dr. I. R. Jankelson, Tufts; Dr. Chester S. Keefer, Harvard; Dr. A. L. Levin, L. S. U.; Prof. Willard D. Mayer, Wayne; Prof. Tate Miller, Baylor; Prof. J. Louis Ransohoff, University of Cincinnati; Dr. Stanley P. Reimann, Jefferson: Dr. G. M. Russell, Billings, Mont.; Prof. H. P. Smith, Iowa; Dr. Horace W. Soper, St. Louis; Prof. S. J. Thannhauser, Tufts; Dr. Robert Zollinger, Harvard.

Further information and program will be forwarded upon request by Dr. Henry Kendall, Chairman of the Program Committee, 16 East 96th Street, New York, N. Y.

AMERICAN MEDICAL GOLFING ASSOCIATION

The American Medical Golfing Association's Twenty-Sixth Annual Tournament will be held at Winged Foot Golf Club, Mamaroneck, New York, Monday, June 10.

The sixty prizes, in the nine events, will be distributed after the banquet at the club-house at 7:00 p. m.

Officers of the A. M. G. A. for 1940 are George Washington Hall, M. D., Chicago, President; D. H. Houston, M. D., Seattle, First Vice-President; Grayson Carroll, M. D., St. Louis, Second Vice-President; Bill Burns, Secretary, 2020 Olds Tower, Lansing, Michigan.

All members of the A. M. A. are eligible for Fellowship in the A. M. G. A. For registration application write the Secretary, Dr. Bill Burns, 2020 Olds Tower, Lansing, Mich.

NEWS NOTES

"A Study of the Occipitoposterior Positions of the Vertex: Analysis, Management and Results in 106 Consecutive Cases", by Drs. Ivan M. Procter and Kenneth Dickinson of Raleigh, was the leading article in the **Journal of the American Medical Association** for February 3. Another article by Dr. Procter, Dr. C. C. Carpenter, and Dr. R. P. Morehead, entitled "The Relation of Chronic Cystic Mastitis to Malignancy", appeared in the March issue of **Surgery, Gynecology and Obstetrics.**

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Dr. Addison Brenizer, of Charlotte, was named president-elect of the Tri-State Medical Society at its meeting in Richmond.

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Dr. Rowland T. Bellows has recently located in Charlotte for the practice of neurosurgery. He was formerly associated with the University of Rochester Medical School and the Strong Memorial Hospital in Rochester.

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Dr. C. C. Belcher, formerly of Alabama, is now associated with Dr. T. R. Huffines in Asheville.

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Dr. J. P. Sullivan, from Massachusetts, is now on the staff of Highlands Hospital in Asheville.

WOMAN'S AUXILIARY

Officers

President: Mrs. C. F. Strosnider, Goldsboro.
President-Elect: Mrs. C. R. Hedrick, Lenoir.
Chairman of Past Presidents: Mrs. P. P. McCain, Sanatorium.
Corresponding Secretary: Mrs. Jack Harrell, Goldsboro.
Recording Secretary: Mrs. J. D. Freeman, Wilmington.
Treasurer: Mrs. C. E. Judd, Raleigh.

A MESSAGE FROM THE PRESIDENT

I should like to make an appeal for all members to attend the State Convention. The program committee has worked out a most interesting program, with Mrs. Charles P. Corn of Columbia, S. C., president of the Southern Auxiliary, as principal speaker. The reports will show a very progressive State Auxiliary, in which all auxiliary members will be interested. The hostesses have planned a most enjoyable three days, with outstanding social events. I hope that every doctor's wife will attend the State Convention—her convention—and have a delightful time.

(Signed) Mrs. C. F. Strosnider,
President.

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ENTERTAINMENT FOR WOMEN

Hostesses—Moore and Hoke County Doctors' Wives

Monday—May 13

3:00 P. M.—Drive to State Sanatorium. Tea—Mrs. P. P. McCain's Residence.
8:30 P. M.—"Keno" — Pine Room — Carolina Hotel. "Being Clinic'd" — by Mrs. Knight, Mt. Olive.

Tuesday—May 14

9:30 A. M.—Opening Session—State Society.
10:30 A. M.—Annual Auxiliary Meeting, Pine Room, Mrs. C. F. Strosnider, President.
2:00 P. M.—Drive to Orchid Gardens, Knollwood, and to Matinee, Carolina Theatre, Southern Pines.
Evening —With Medical Society.

Wednesday—May 15

10:00 A. M.—Bridge—Women's Card Room, Carolina Hotel.

Information

1. Register on arrival and receive badge. $1.00 Registration Fee for all who do not present 1940 membership cards.
2. Wear Badge to all functions.
3. Please register promptly for various events and help the meeting run smoothly.
4. Visiting women are asked to drive their own cars if possible.

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Minutes of the Board of Directors of the Auxiliary to the Medical Society of the State of North Carolina

Spring Meeting

Friday, March 12, 1940

Goldsboro, N. C.

The Board of Directors met with Mrs. C. F. Strosnider, who called the meeting to order at twelve o'clock April 12, 1940. Mrs. P. P. McCain invoked God's blessings upon the members and their deliberations. Mrs. Strosnider presented greetings, graciously welcoming us and urging us to feel "at home in her home". She said all of Goldsboro evinced their interest in our presence by the many courtesies extended her, helping her in her expression of hospitality. Mrs. W. H. Smith also spoke words of welcome. Three corsages having been sent, one was presented to Mrs. C. R. Hedrick, president elect, and one to Mrs. P. P. McCain and one to Mrs. J. B. Sidbury in recognition of their many services to the organization.

Mrs. Strosnider stated that she would not give a full report now, since that would be made at the State meeting of the Auxiliary. She said, however, that she had had a pleasant year, the burdensome part of her work being greatly relieved by the stenographic help of Miss Bass, Dr. Strosnider's secretary, and the efficiency of her corps of officers. Mrs. P. P. McCain gave no formal report. Mrs. Hedrick, president-elect, said that her year had been spent in preparation for her work as president, reading the minutes of past meetings, and preparing a hand-book of instructions and suggestions for presidents. She thanked Mrs. Strosnider for her help and expressed the hope of trying to make the standard set by Mrs. Strosnider.

For sake of brevity, the comprehensive reports made by the vice presidents, chairmen of committees, and district councillors will not be recorded here. They are filed in the secretary's book to be used as references.

After Mrs. Kent's report on the McCain Bed, Mrs. P. P. McCain gave us a personal glimpse of our guest patient, who is a nurse and the daughter of a doctor who was killed while performing his duty. She is a very deserving person, and would appreciate any attentions we could show her. Mrs. McCain reported that the Robeson County Auxiliary had given a year's subscription to *Life* to the patient in the McCain Bed. At the conclusion of her report on the Student Loan Fund, Mrs. R. A. Moore read a letter from Charles Highsmith, Jr., of Fayetteville, applying for a loan. Mrs. Ben Lawrence made the motion, seconded by Mrs. P. P. McCain, that this name be referred to the Student Loan Committee for consideration and decision.

Upon the report that Mrs. Isaac Manning was in Watts Hospital, the motion was made by Mrs. R. S. McGeachy, seconded by Mrs. Judd, that a letter be written to her expressing our regret at her absence. The secretary was instructed to do this. The Board members were requested by the president to make any suggestions as to material to be used in the April and May issues of the NORTH CAROLINA MEDICAL JOURNAL to Mrs. Sidney Smith, whom she had appointed for this task. Mrs. Smith was authorized to select a committee.

The question was asked by Mrs. Strosnider: Have the printed sheets of information compiled in the fall proved helpful to the organization? Mrs. Harry Winkler and Mrs. T. L. Lee expressed themselves in favor of them. Also the question was made as to whether the results secured from pamphlets and other forms of literature distributed justified the work and expense which these incur.

Our roster of officers and chairmen and our transactions were for some reason left out of the TRANSACTIONS OF THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA —1939. We appreciate the special pamphlets which were gotten out to help correct this oversight, but we feel that these will reach only our membership of this year and that it is not so permanent as the regular bound edition of the TRANSACTIONS and will be more easily misplaced. Therefore, it was moved by Mrs. J. B. Sidbury, seconded by Mrs. R. S. McGeachy, and carried, that the secretary write a letter to the chairman of the Publications Committee and to the incoming president of the Medical Society of the State of North Carolina requesting that the TRANSACTIONS carry our roster of officers and chairman for 1938-39 as well as for 1939-40, and that our future records be incorporated in the TRANSACTIONS so that the records would be unbroken.

At this time the Board adjourned to enjoy a most delectable luncheon served by our hostess and her friends.

Upon reassembling, the treasurer, Mrs. E. C. Judd, gave the following report: Balance in upkeep of McCain Bed Fund, $276.87; balance in General Expense Fund, $316.12; balance in Student Loan Fund, $652.52; amount in McCain Endowment Fund, $1,605.59. Mention was made of the excellent report of Mecklenburg County.

From the excellent reports of District Councillors the idea employed by the Charlotte Auxiliary was deemed worthy of note as an example to other Auxiliaries—namely, the entertaining at a tea of those doctors' wives who had entered the organization since 1935.

Under old business, Mrs. P. P. McCain reported on the tentative program for the Auxiliary meeting at the State Convention in Pinehurst. The speaker is to be Mrs. Charles P. Corn, Columbia, S. C., president of the Southern Medical Auxiliary. Many interesting plans of entertainment were outlined. Mrs. McCain asked if it would be permissible to charge at the card party to help defray the expense. The concensus of opinion was that a nominal charge should be made.

The motion was made by Mrs. J. B. Sidbury, seconded by Mrs. R. S. McGeachy, that at the annual state meting reports be made only by the president, vice presidents representing the projects of the auxiliary, treasurer, and district councillors.

As new business, the president brought up for discussion the suggestion of Dr. Long that the Auxiliary secure advertisements for the NORTH CAROLINA MEDICAL JOURNAL. Mrs. R. S. McGeachy was appointed chairman of a committee to investigate the advisability of this. She selected Mrs. J. B.

Sidbury and Mrs. P. P. McCain as members of her committee.

Mrs. Strosnider announced the meeting of the American Medical Association and Auxiliary in New York City, June 10-14, stating that she expected to be present and hoped that others would attend. She urged us to keep tidy, instructive note books to pass on to our successors.

We thank Mrs. Strosnider for the delightful day spent "being at home in her home".

Respectfully submitted,
LIDIE PENTON FREEMAN.
Recording Secretary.

A LAST REMINDER to make your reservation for the 18th Annual Convention of the Woman's Auxiliary to the American Medical Association to be held at the Hotel Pennsylvania, New York City, June 10 to 14, 1940. New York has much to offer aside from the convention and we are sure you will not want to miss the opportunity of visiting New York this year.

Mystery of the Vacant Chairs.—"I cannot understand why so few men attend their county and state medical society meetings. It is not because they are so busy, as the busiest physicians are always found where there is a chance to learn. After years of observation I have reached the conclusion that there are three kinds of physicians who don't attend meetings—(1) the person who has not the ability to plan his work so that he can have an evening for recreation at the meeting; (2) the man who thinks he knows it all, has not read a new book since leaving school, and has no time for reading the Journal or other publications; and (3) the man who is afraid he might lose a patient should he leave his office. These three types form the fault-finding group; they complain, but will not come to the meetings and put their shoulders to the wheel, clarify our visions, help remove the faults they see, and become what is most needed by the society and always welcomed by its officers—workers instead of drones or complainers.

"Yes, the opportunity for the present-day physician to be an up-to-date physician is right at his door, and I am not only sorry for those who are missing these opportunities, but for their patients."—John A. Hawkins, M. D., Pittsburgh Medical Bulletin; quoted in the New York State J. Med. 40:434 (March 15) 1940.

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The Instinct for Intensive Study.—In an era which is so characterized by scientific progress in all directions it would be strange and unfortunate indeed if medical men should lack the instinct for intensive study or for scholarship. Primarily, and in its highest expression, specialization represents the attempt to fulfill an intellectual craving, and as such it is most desirable, both for the tone of the profession itself and for the public which depends on the profession.—Peabody, Francis W.: Doctor and Patient, New York, The Macmillan Company, 1939.

In Memoriam

DR. WILLIAM CARTER MEBANE

By Ernest S. Bullock, M. D.

Wilmington

Dr. William Carter Mebane was born in the country near Madison, in the year 1882. He was the son of a Presbyterian minister. The instructions of the pulpit were his throughout the week. Of a spiritual nature, throughout his lifetime, he walked in the way of the Lord no less firmly than in the footsteps of Apollo, the physician. He was active in the building of the new Winter Park church and served it as an elder.

Dr. Mebane attended Fredericksburg College in Virginia. He studied medicine at Davidson, and finished in 1905 in Charlotte. He remained at The Presbyterian Hospital for an internship.

Locating in Mount Airy, he began the routine of a horse and buggy doctor. In the first year, he contracted typhoid fever. Realizing that death might rob him of the privilege, he called his sweetheart, herself a nurse, to his bedside and married her. Her ministrations continued until February 4, 1940, when these two were separated by his death. His mantle falls on the shoulders of an able son.

In 1915, Dr. Mebane completed the course in Urology at the New York Post Graduate Medical School, and moved to Wilmington. He was our first specialist in this branch, and dominated the field until his death. By temperament he was conservative. He was always a student, and as experience accumulated, his opinions became definite and useful. Competent, generous, understanding and intuitively ethical, he was a fine colleague. So well did he manage his practice that he had more personal leisure than any physician I have ever known. He was too modest to publish his opinions and too sincere to exploit himself. He was strictly a clinician. By patience and intelligent investment, he accumulated a substantial personal estate.

With leisure, Dr. Mebane had time to read, observe and meditate. He evolved a philosophy that brought him peace and happiness. Much of his time was spent at home with his wife and son. He devoted many tranquil hours to his garden and flowers. He played at mechanics, sailing and swimming. No blare of trumpets or flying of banners were needed to stimulate his ego. He epitomized the romance of the commonplace. He was undemonstrative and sought no friendships or profitable associations, but he accumulated an amazing number of both.

Dr. Mebane was natural, nothing added, nothing not shown. He pursued the even tenor of his way. Law abiding by instinct, he obeyed the law, although he might consider the statute unwise. This attitude toward things social, professional, political, and religious, spared him the conflicts by which men are made wretched.

For the last ten years he worked despite declining health. While his strength waned, the order of his life was unchanged. He worked almost to the end. Sickened by obscure disease of the liver, he sought relief by anastamosis of the gall bladder to the intestinal tract. Many factors made death a definite possibility. His mental attitude and expressions should have been recorded and read by all who contemplate surgery. They showed the complete adjustment of the man and his mind, to

Nature and to its laws, under which he lived. He survived his operation for five days; his symptoms relieved, he thrilled with the prospects of a new life. Happy throughout the day, prepared for the night, he expressed the prospects of a pleasant rest. He turned his head on the pillow. In an instant, his spirit was swept away to the abode of our loved ones.

Thus passed an able physician and a noble man. We have much to learn from his life. He showed that a physician can have a normal family life. He proved that we could struggle less, hate less, work less, and have love, peace and friendship in abundance; yet attain personal security. Dr. Mebane attained all of these, and one who does, sung or unsung, is truly great.

Following our custom these personal traits are written into the record, so that young physicians to come may know the manner of men who preceded them.

A PROUD HERITAGE

Medicine is the most ancient of professions, being older than Christianity and antedating the inception of civil law. It has its own system of rewards and punishments, its own disappointments and its own glories. It is a profession that has a broadening influence on the human mind and is characterized by a most splendid charity. It stimulates the acquisition of the best tendencies and is a protection against the worst tendencies. It constructs no trusts; it founds no monopolies; it excludes no qualified practitioner; it retains for its profit no valuable discovery, and it has no standing room for the quack, the scoundrel, and the charlatan. Its best work is done in the light which beats upon its throne, not in the arena of politics encouraged by the cheers of thousands, not in the seclusion of the cloister sustained by the hope of eternal joy, but in the storm and windswept country, in the streets of the village, in the boulevards of the city, on the desolate field of battle where pain and pestilence, illness and misery are combated often with none but God to see it. It furnishes a curiously checkered life, a life in which storm clouds alternate with sunbeams. With the exception of the ministry, it stands closer than any other calling to the secret of eternity and watches death ever busy with her shuttle as she weaves her somber threads into the woof and warp of the affairs of men. It seeks to mitigate human suffering, to prolong human life. These have ever been its watchwords, are still and always will be, constituting its cloud of smoke by day and its pillar of fire by night.

One should enter such a profession with properly exalted ideas; with a belief in its greatness, its dignity, its stability, its real importance, its essential strength. One should resolve to learn to observe, to compare, to analyze, to study, to think, to avoid formulas, to cast out sordid thoughts, to repudiate shallowness, advertising and vain pretentions. In short to be a worthy disciple of Aesculapius, reflecting honor and credit on the profession and deriving from it happiness that makes life worthwhile, being held in grateful remembrance by those whom one has served and in respect and esteem by the confreres with whom and among whom one has lived and worked.—Irvin Abell, M.D., in the Bulletin of the American College of Surgeons, January, 1940. [Excerpt]

BOOK REVIEWS

THE PATIENT'S DILEMMA. By Hugh Cabot, M.D. Price $2.50. Pp. 284. New York: Reynal and Hitchcock, 1940.

Although the subtitle of this book is "The Quest for Medical Security in America", it is not calculated to leave the reader, lay or medical, with any feeling of security. It creates the impression in the reader that the average individual private practitioner is incompetent, rapacious, and often stupid; that fee splitting is the rule rather than the exception; and that it is only the relatively high standard of living in this country that is responsible for the good health of the people. In taking issue with the often repeated statement that 85 per cent of the diseases for which people consult doctors could be treated by a competent general practitioner, Dr. Cabot goes to the opposite extreme of insisting that the majority of patients who go to doctors need exhaustive examinations by specialists and laboratory technicians. For example, he says that an x-ray examination "will certainly be required where disease either of the heart or lungs is present". If this be true, most of us have been repeatedly guilty of malpractice in treating pneumonia, rheumatic endocarditis, and coronary occlusions without benefit of roentgenology.

Dr. Cabot's remedy for all our medical ills is to substitute group practice for the individual practitioner, with medical insurance prepaid—and perhaps under Government regulation: "If I have been right in my view . . . that group practice in one form or another is likely to supersede, in considerable fields, private individual practice, then it might easily come about that . . . Government will be able to insist upon standards or refuse to contribute funds."

This book is stimulating and thought provoking. It might well be read with interest and with some degree of profit by members of the medical profession—but it is hard to understand Dr. Cabot's motives in airing publicly such controversial issues, and in virtually slandering his own profession. He may feel better for having it out of his system, but he has not helped the cause of medicine. The confidence a patient has in his doctor is often a tremendous factor in his recovery—and it will be hard for a layman who reads this book ever again to feel the same confidence in his doctor.

THE 1939 YEAR BOOK OF GENERAL THERAPEUTICS. Edited by Bernard Fantus, M.D., late Professor of Therapeutics, University of Illinois College of Medicine; and Leroy Hendrick Sloan, M.D., F.A.C.P., Professor of Medicine, University of Illinois College of Medicine. Price $2.50. Pages, 532. Chicago: The Year Book Publishers, 1940.

This volume measures well up to the standard of its predecessors. It is the twenty-second issued under the editorship of Dr. Fantus—and will be prized more highly by its purchasers because it is the last one, since Dr. Fantus died on April 14.

In preparing this book, literature for 1939 was read thoroughly and abstracted with discrimination. The latest remedies and remedial measures have been included and evaluated with calm, seasoned judgment. More than 2000 articles were read, from which 456 were selected for abstraction. The physician who uses this book for reference may be sure that he is familiar with the most recent trends in therapeutics.

ON OXIDATION, FERMENTATION, VITAMINS, HEALTH AND DISEASE. **Abraham Flexner Lectures, Series Number Six.** Albert V. Szent-Gyorgyi, M.D., Professor of Medical and Organic Chemistry, University of Szeged. Price, $2.00. Pages, 109. Baltimore: Williams and Wilkins Co., 1939.

This book contains the five lectures comprising the sixth series of Abraham Flexner Lectures given at the School of Medicine at Vanderbilt University in March and April, 1939, by Dr. Szent-Gyorgyi.

This series of lectures deals with a field of knowledge which is highly specialized and of which most readers have never heard. In spite of this the subject of biological oxidation has been presented in such a clear and fascinating manner, without any suggestion of "talking down", that it is thoroughly understandable and not at all difficult to read. In the lecture on "Vitamins, Health and Disease", the author points out that the minimal amount of vitamin necessary to prevent manifest disease may be many times less than the amount necessary to keep the body in an optimal condition of perfect health. The mere fact that 1.5 mgs. of ascorbic acid a day will prevent scurvy in an inactive caged guinea pig does not mean that the animal is healthy. The author asks, "Do we call it health if we sit in a corner and do not have scurvy?" He believes that unwarranted conclusions have been made from animal experiments and that somewhere our fundamental conceptions are wrong. The book will probably not be of great interest to the harried general practitioner, but the physician with scientific bent will find much of interest in it.

ESSENTIALS OF THE DIAGNOSTIC EXAMINATION. By John B. Youmans, M.D., Associate Professor of Medicine and Director of Post-Graduate Instruction, Vanderbilt University Medical School. Price, $3.00. Pp. 417. New York: The Commonwealth Fund, 1940.

The purpose of this book is well expressed in the preface: "To assemble in a single volume the minimum of diagnostic methods and procedures needed in the general practice of medicine and available to all physicians." The author has succeeded admirably in his aim. He has the gift of saying clearly and simply what he wants to say, and has compressed into a small volume the essence of a rich experience as a clinician and teacher. The illustrations, while not numerous, are excellent, and really illustrate. The book can be recommended without reservation to the student who wants to master the essentials of physical and laboratory examination with a minimum of effort, and to the practitioner who wants a single volume post-graduate course in the subject. It deserves a long, useful and distinguished life.

The Personal Bond Between Doctor and Patient.—Any reorganization of the medical profession that threatens the personal bond between doctor and patient is to be viewed with suspicion, even if the object appears at first sight to be more thorough and careful practice. With the exception of the relationship that one may have with a member of one's family, or with the priest, there is no human bond that is closer than that between physician and patient (or patient's family), and attempts to substitute the methods of machine or organization, be they ever so efficient, are bound to fail.—Peabody, Francis W.: Doctor and Patient, New York, The Macmillan Company, 1939.

Metrazol For Acute Alcoholism

The Psychiatric Division of Bellevue Hospital has been studying alcoholism and the many problems it creates for some time. Acute alcoholism presents two types of difficult clinical problems—the disturbed, resistive, violent alcoholic patient, or the patient in alcoholic coma. Ordinarily, the former group is treated with sedatives, restraint, and seclusion; and the latter with various stimulants. Because the number of alcoholics admitted to Bellevue is very large, any method which facilitates the management of such patients is desirable. Metrazol was therefore tried in a group of 50 patients, 34 of whom were in an excited state and 16 of whom were comatose.

"Immediately after admission such patients were taken to the emergency room and received 5 cc. of 10 per cent solution of metrazol intravenously, the rate of injection being about 30 seconds for the 5 cc. We found that in a person narcotized with alcohol, this speed of injection failed to induce a general convulsion. In some individuals, twitching of the face appeared. We refer to this dose time factor as a 'subconvulsive dose'."

"After the injection the patient was kept in the emergency room for a short time and then sent to the ward best suited for his clinical condition. Sedation and other treatment were ordered as indicated. It was found, however, that a large number of the excited alcoholics would quiet down in two to ten minutes after the injection and no further special treatment would be necessary. Comatose patients frequently regained consciousness in five to thirty minutes and were able to give an adequate admission history."

In discussing their results these authors state the administration of metrazol to acute alcoholics "was followed by a marked improvement in the clinical state. Such improvement manifested itself in the arousal of the comatose cases, and sedation of the excited group. This improvement was not due to any changes of the concentration of alcohol in the blood. It is suggested that this apparent biphasic effect of metrazol is due to a direct stimulation of the narcotized cerebral cortex. In the mildly narcotized, or agitated group, the improvement is ascribed to a stimulation of the depressed inhibitory centers. Improvement in comatose cases is considered to be due to general stimulation of the central nervous system." (Orenstein, Leo L.; Bowman, Karl M.; Kagan, Julia R.; and Goldfarb, Walter —"Use of Metrazol in the Treatment of Acute Alcoholism." Am. J. of Psychiatry, 96:589 (Nov.) 1939.)

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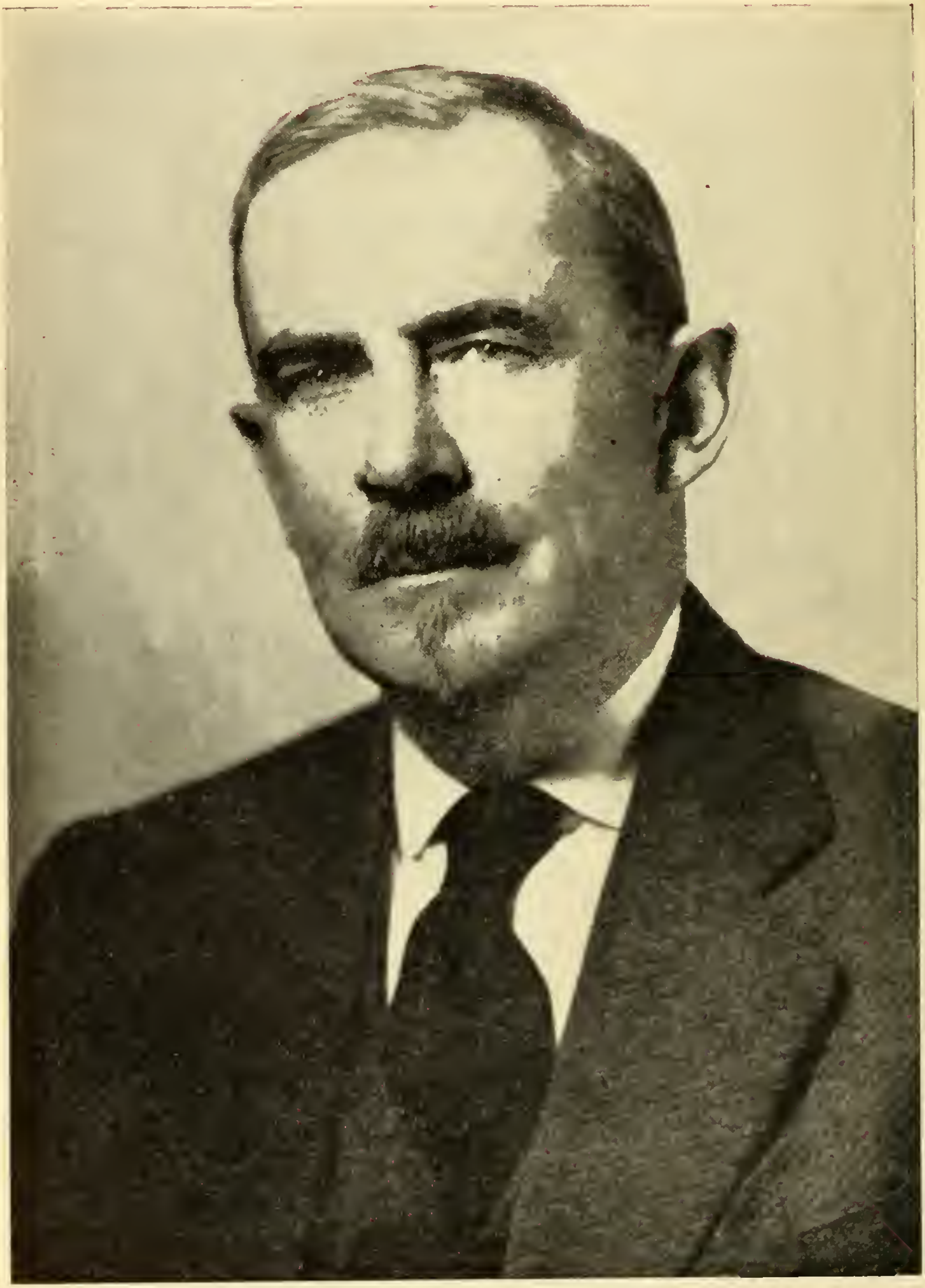

William Allan, M. D.

NORTH CAROLINA MEDICAL JOURNAL

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VOL. 1 JUNE, 1940 No. 6

PRESIDENTIAL ADDRESS

WILLIAM ALLAN, M. D.

CHARLOTTE

"And being in Bethany in the house of Simon the leper, as he sat at meat" (Mark 14:3) Jesus said, "For ye have the poor with ye always, and whensoever ye will ye may do them good." (Mark 14:7).

Some nineteen hundred years later our present leader and some of his disciples, sitting in Washington, are attempting to abolish by governmental regulation the social insecurity that accompanies sickness, poverty and old age.

The individual responsibility given us to "love thy neighbor as thyself" is now thought to lack efficiency, and using this as an excuse we are being urged today to hire Uncle Sam as our "stand-in" to give meat to those who are anhungered, drink to those who are thirsty, to clothe the naked, and to visit the sick.

The maneuvers of the New Deal so far have served chiefly to confuse and distract us in our daily tasks of administering to the sick. That task will become lighter only as we, ourselves, gradually learn to subdue disease. Governmental insurance against sickness, poverty and old age will abolish neither the one nor the other, nor will it affect materially either the sickness or death rate. Fortunately, the Wagner Bill has been dropped for this year and so need not be discussed.

I am glad to report that the Hospital Savings Association which was sponsored by the Society is on a sound financial basis.

Certain elements in our population wish to experiment with the inclusion of doctors' fees in our hospital prepayment plans. This subject was brought before you last night in a very lucid report by our First Vice President, Dr. F. Webb Griffith of Asheville, who for several years as Chairman of the Committee on Socialized Medicine has made an intensive study of this subject.

The medical sciences have made remarkable progress in our state during the past year. In the field of medical education:

(1) The University has doubled its teaching force and occupied a magnificent new building.

(2) Wake Forest has received a fund from the Bowman Gray Estate to establish the last two years of a four-year medical school in Winston-Salem.

(3) Duke is continuing its splendid record in teaching and research—particularly in the field of nutrition this year.

(4) Our post-graduate program has been very successful.

Our State Board of Health, under the able leadership of Dr. Carl V. Reynolds, continues to set an example for the rest of the country.

The intensive campaign, with the help of the Reynolds funds, to abolish syphilis in our state is a fine example of how to wage war against disease. Dr. Cooper's installation of birth control service in County Health Departments, so that contraceptive information is available to any one, is an experiment that will be watched with a great deal of interest to see how it affects our population.

Surgeon General Parran has recently pointed out that our diphtheria mortality is about ten times that of New York. We expect this mortality to be cut down as a result of the law passed at the suggestion of Dr. Sidbury and the members of this Society last year requiring all children to be immunized after the age of six months. This law

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Read before the First General Session of the Medical Society of the State of North Carolina, Pinehurst, May 13, 1940.

came into effect the first of January past and has hardly had time, as yet, to show results.

This situation leads me to say that in spite of the splendid work that our public health men are doing in this state, we should not expect them to carry the whole burden. It is the practicing physician who is in touch with the family and young children, and he is the man who should feel responsible for seeing that these children are immunized. There is no justification for trying to shift this responsibility to the health officer, who cannot be expected to keep up with all the babies born in the country and whether or not they have complied with the law.

The building and development of hospitals goes steadily forward under the conservative leadership of Dr. W. S. Rankin and the Duke Foundation.

The committee appointed last year to establish a medical journal, owned and controlled by the Society, has successfully accomplished its task, and under the able editorship of Dr. Wingate Johnson and his editorial board, the NORTH CAROLINA MEDICAL JOURNAL has taken its proper place in the field of medical journalism.

I wish to take this occasion to thank the members of the Society, individually and collectively, for the help they have given me this past year in making some state-wide surveys of our hereditarily defective children.

In this connection, I should like to call your attention briefly to the state set-up for taking care of its defective dependents, and to make some suggestions.

Nearly a century ago the State assumed the care of the mentally sick, thus divorcing organized medicine from any authority, and consequently any responsibility toward these unfortunates. The result has been stagnation in this field until the past year. The building of larger hospitals for the custodial care of an increasing number of insane by very much over-burdened professional staffs shows lack of foresight.

In the same way the State is trying to salvage the blind, the deaf, the crippled, and the feeble-minded children in state hospitals and schools all with separate lay boards, under the Department of Charities and Corrections. To keep on breeding these defectives and then to offer them state charity and the rather futile corrections that are possible, without any effort toward prevention, seems to me unutterably stupid. How different has been our experience with tuberculosis.

The State Board of Health, some years ago, established a state tuberculosis hospital, and although the control of this institution was later taken away from the State Board of Health, nevertheless the relentless campaign for prevention by both clinical and educational means that has been waged by Dr. P. P. McCain and his associates is a record we are proud of.

The State's defective dependents that I speak of are largely the result of morbid heredity. The supply of these defectives can be vastly reduced by eugenic measures systematically applied by organized medicine as a regular part of our public health program.

Both the authority and the responsibility for the prevention of hereditary disease should be vested in organized medicine, and our institutions for the care of the mentally sick and the defectives should be under the State Board of Health—the logical organization to take up the task of preventing hereditary disease, now that our infectious diseases are rapidly disappearing.

Is This Selfishness?—"I am not an oldster, but I recall the days of Lydia Pinkham, electric belts, the traveling advertising quack, and the Indian medicine show. I recall the time when the existence of most medical journals depended on the advertising of worthless proprietary preparations and apparatus. I remember the slander suits brought against the officers of the Association because of its campaign against quackery and dishonest advertising, and the alarm felt a quarter of a century ago because of the plague of cult practitioners seeking a short cut to care for the sick. In defense of scientific medicine, we were then, as now, accused of being a high-handed monopoly. I recall the efforts required to develop and perfect our public health service and our laws relating to license for the practice of medicine. There was determined opposition at every turn.

"Is all this the story of a group indifferent to human need? Is this a story of selfishness? Were these benefits for the physician? Or has there been enacted the drama of an idealistic profession fighting to wipe out the diseases which furnish it a livelihood, battling to protect its people against fraud and striving at all times to defend the advancement of science, and honesty in its application?"—Rock Sleyster, M.D., President of the A. M. A., addressing the New Hampshire Medical Society, quoted in the New York State J. Med. 40:423 (March 15) 1940.

THE USE OF PLASMA AS A SUBSTITUTE FOR WHOLE BLOOD

JOHN ELLIOTT, SC.D.
WALTER L. TATUM, M. D.
N. NESSET, PH.D.

Following a study by McKenzie(1) in 1935 of the fate of the plasma proteins in acute abdominal infections, the need was recognized for simplified equipment for the transfusion of blood that would permit its storage and reduce the reaction rate. A preliminary report(2) was published in 1936 in *Southern Medicine and Surgery* suggesting the use of a vacuum container which would make the collection and administration of blood easy and aseptic. This equipment would make possible even in small institutions the storage of blood and its conversion to plasma after the safe storage period. It was suggested that plasma could be given without grouping or cross matching even to incompatible types; and in many cases the indication was for plasma rather than whole blood.

The original equipment had certain inherent defects which have been overcome. Blood transfusion equipment(3) which enables a single operator without assistance to collect blood aseptically is now universally available. Blood so collected can be safely stored without special refrigeration. Reports of its use in thousands of cases indicate that it is satisfactory, and with proper attention to the preparation of donors and recipients' sets, reactions from transfusion have been materially reduced by its use. A technique for the aseptic removal of plasma from fresh or out-dated blood has been developed and reported in *The Military Surgeon*(4). Incompatible plasma has been administered in a large series of cases without reaction, and the intramuscular route for its administration has been found to be possible, practical, and satisfactory when the intravenous administration is impossible or impractical. The original suggestions for the use of plasma as a substitute for whole blood have been found to be rational, and its scope of usefulness has been enlarged by many additional indications.

The intravenous use of plasma in man as a substitute for whole blood was reported by Filatov(5) (1935) and Heinatz and Sokolow(6) (1935). In a personal communication(7), Strumia(8) reports the use of serum and plasma since 1927. Thalhimer has used convalescent serum intravenously for many years, as have Palazzo and Tenoconi(9).

There are many reports in the literature(10 11 12 13 14 15 16) showing the effectiveness of normal dog serum in combatting experimental shock, plasmaphoresis hypoproteinemia, shock from repeated hemorrhages and protein starvation in dogs.

Mann(17) (1918) reported the successful use of normal dog serum in experimental shock produced by exposing the abdominal viscera of dogs. This was confirmed by Bond and Wright(11), Beard and Blalock(12) and others. Whipple(14) produced a state of shock in dogs by rapid plasmaphoresis, and completely relieved the symptoms produced by the re-introduction of dog serum. Whipple et al(15) have shown that a dog can be maintained in nitrogen equilibrium and at normal weight on fat and carbohydrate by

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From the Department of Pathology, Rowan Memorial Hospital, Salisbury, N. C. Presented at the Second General Session of the Medical Society of the State of North Carolina, Pinehurst, May 15, 1940.

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mouth, and serum or plasma by vein. Dogs rendered edematous by plasmaphoresis were restored to a normal state with transfusions of normal dog serum by Weech, Goettsch and Reeves(16) (1933). Numerous other reports in the literature indicate that animal specific serum or plasma should be a rational, safe, and effective substitute for whole blood.

From our survey of the literature, we felt that successful experimental work on animals had demonstrated that serum or plasma could be used as a substitute for whole blood. For this reason we eliminated experimental work on dogs and started the use of plasma in man.

The search for a simple aseptic technique for the collection and storage of whole blood led to the development of a technique for the preparation and preservation of plasma(4). Using out-dated stored blood as a source for plasma led to a study of stored blood to determine its optimum storage period(18). This was determined as five days. It is, of course, recognized that blood can be safely stored for a much longer period, but, from our own work and reports in the literature(19 20 21), we feel that the five day period is optimum.

A five day storage period would naturally result in the wastage of a considerable quantity of blood. Converting out-dated blood into plasma, which can be preserved for a much longer period, eliminates wastage. When blood is stored in small institutions this is an important factor, as the wastage of blood would counteract the benefits of available preserved blood.

The tremendous importance of erythrocytes for the transportation of oxygen and carbon dioxide undoubtedly has been responsible for focusing attention on the red cells when the indication for transfusion has been sought. Until recently, the importance of the plasma fraction of blood has not been fully appreciated. As we have examined the indications for transfusion, we have become convinced that the plasma fraction is of even more importance than the cellular fraction.

Indications For the Use of Plasma as a Substitute For Whole Blood

1. *Shock, Without Hemorrhage:* The recent work of many investigators has resulted in a better understanding of the mechanism of shock. The use of oxygen(22), heat(22), adrenalin(23), physiological saline(24), hypertonic salt solution(25), cortin(26), whole blood transfusions(27) and plasma infusions(4 8) has been reported and evaluated. The use of plasma as a substitute for whole blood is discussed, with the recognition that it is but one factor in the treatment of shock.

While the many investigators of shock(26) (28 29) may differ on some points, all are agreed that loss of plasma through atonic capillary walls into the extra-vascular spaces, with resulting diminished blood volume and hemoconcentration, is constant. They are also agreed that plasmorrhage(30) is responsible for the reduction in blood volume which causes the fall in blood pressure, with the resultant failure of circulation of red cells and ultimate anoxia. They are further agreed that blood pressure must be restored early and maintained.

Acacia has been used for this purpose, but it is not a physiologic substance; it is not readily removed from the body, and according to some observers(31) is dangerous. Whole blood transfusion has been used for many years, and is very satisfactory if available. However, whole blood requires time for preparation, even if stored blood is available; and the delay may be fatal if a donor must be procured. Plasma can be immediately available, as cross matching is unnecessary, and it seems to be as satisfactory, or more so, than whole blood. It should be

---

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more satisfactory than whole blood because its diluent, dextrose and saline solution, is also capable of increasing blood volume, whereas red cells are not.

Plasma, instead of whole blood, has been used routinely in the treatment of shock at the Rowan Memorial Hospital, Salisbury, during the last two years. While it is difficult to compare the effectiveness of two therapeutic agents in different patients, it is the consensus of opinion there that plasma is no less effective than whole blood. Its ready availability has made it life saving in many instances.

2. *Shock Due to Hemorrhage:* The loss of blood from the body is of little immediate importance, unless it results in shock. Diminished blood volume, with resultant drop in blood pressure and ultimate failure of circulation followed by tissue anoxia, is the important factor causing shock, rather than the loss of red cells. Early restoration of blood volume is the all important factor. Following severe hemorrhage with loss of half the blood volume, there will remain more than 2,000,000 red cells per cm. This number of red cells will be sufficient for oxygenation of the tissues, if pressure and volume are sufficient to circulate them. Whole blood restoration is best, but of more importance is the early restoration of blood volume. If plasma is administered early, blood volume is quickly restored, and it is rarely necessary to transfuse whole blood.

Although whole blood is unquestionably the ideal fluid for restoration of blood volume following hemorrhage, plasma can be effectively used. Hemorrhages occur not only in hospitals where blood banks are maintained or fresh blood transfusions can be given, but also in institutions and homes where immediate transfusion is impossible. It also happens in well prepared hospitals that the emergency may be too great for the delay incident to the preparation of whole blood.

The minimum time necessary for the safe cross matching of blood is twenty-five minutes, if ice box blood is available. From an hour to several hours may be necessary if a donor has to be secured. Plasma can be started in a hospital or home immediately, and may be followed by whole blood, if indicated, after the emergency has been relieved.

Blood banks can not be maintained in all hospitals, nor can blood be available to all patients in their homes. Prepared plasma can be stored in any institution or doctor's office in readiness for any emergency. It can be carried into the home and infused as readily as dextrose and salt solution.

This has been thoroughly demonstrated by Dr. William Long at the ten-bed Mocksville Hospital, where a plasma bank is maintained. There whole blood transfusion of fresh or stored blood is not impossible, but impractical. Storage of plasma there for immediate use is not only practical, but almost indispensible. Blood is drawn from hypertensive patients as part of their treatment and sent to the Rowan Memorial Hospital, where it is converted to plasma and returned for storage. More than twenty infusions have been given in the last year, at least one of which was life-saving. This case is reported.

J. G. S., a white female, was admitted to the Mocksville Hospital at 2:30 a.m., October 12, 1939, in shock resulting from obstetrical hemorrhage. She was unconscious, with air hunger, cold and clammy, and perspiring freely. On examination the hemorrhage was found to be due to a central placenta previa. As quickly as possible a podalic version was done, and pituitrin administered. As Dr. Long had to work by himself, no supportive measures could be carried out during this time. Time was not available for blood pressure or pulse determinations, but the patient appeared moribund. Without loss of time the rapid intravenous infusion of plasma taken directly from the ice box was started. During the infusion the patient's condition showed marked improvement, and the pulse became palpable. The patient was returned to bed and the infusion continued until 600 cc. had been administered.

The following day the red cell count was 2,250,000, indicating that the hemorrhage had been a severe one. An uneventful recovery enabled the patient to leave the hospital on the tenth day. The red cell count on discharge was 3,750,000. No red cells were administered.

3. *Burns:* Following extensive burns, there is an exudation of fluid containing a high concentration of plasma proteins. Local capillary damage, with increased permeability of the capillaries to proteins, permits the accumulation locally of large quantities of blood protein. The damaged tissue releases "H" like substances, which act to damage capillaries throughout the body, increasing

their permeability to proteins. All of this results in a loss of plasma protein from the circulation. This loss accounts for the decreased blood volume, the hemoconcentration and the circulatory failure that invariably follows extensive burns. The red cell count may increase to 8,000,000 or more.

Transfusion of whole blood has been known to be beneficial in burns, and is a recognized therapeutic measure. An examination of the reasons for transfusing burned patients suggests that the beneficial effect is from an increase in the blood volume. Red cells being above normal, there is no indication for increasing them. Plasma alone should be, and, in our experience has been, effective. It may even be said that the transfusion of whole blood is contra-indicated if plasma is available.

4. *Infections:* The decrease in plasma proteins, following abdominal surgery where the patient is unable to take food by mouth, and where there is an increased protein metabolism, with loss of protein through kidneys and from drainage was reported by McKenzie(1) (1935). It has been known for a long time that blood transfusion is beneficial in severe infections, but the reason has not been clear. Complement in transfused blood is, of course, of utmost importance; but more important is the protein of the blood plasma. It not only maintains normal plasma protein, if given early and in adequate quantities, but also furnishes protein for the body's metabolic needs. In many of these cases red cell counts are normal. It is our practice to infuse plasma until the red cell count drops to about 4,000,000, and then raise the blood count to normal with whole blood, resuming the use of plasma when this is accomplished.

The need of the sick patient for protein is greater than the need of the well person. Elevated body temperature increases metabolism, infection destroys tissue, and protein may be lost from the body in pus and urine. This need is quite evident when an illness becomes extended. *Maintenance of plasma proteins is much less difficult than their restoration;* therefore plasma infusions should be started before the need is apparent.

5. *Hypoproteinemic Edema:* When protein intake is inadequate from starvation or other causes, a reduction in the plasma protein will occur. The same thing will happen if a considerable quantity of protein is lost from the body over a long period of time. When the plasma proteins are reduced below 4 per cent, edema occurs, because the colloid osmotic pressure is reduced below the point where electrolytes and water can be held in the blood vessels. Treatment must naturally be directed towards increasing the plasma proteins. Increased oral protein intake is the most satisfactory means of increasing the blood proteins. There are occasions when this method is inadequate, and the infusion of plasma necessary. Dramatic clearing of edema is often noted if adequate plasma is administered. It must be remembered, however, that if any degree of anuria exists, sudden increase of plasma proteins above the edema level may result in the withdrawal of water from tissues to blood stream at a rate faster than the kidneys can remove it from the circulation.

6. *Convalescent Plasma:* The use of convalescent plasma and serum is increasing. This is also true of the dosage employed. Whole blood transfusions are often employed when large quantities of convalescent plasma are indicated in the treatment of an infection and the donor is of the same group as the recipient. When donor and recipient belong to different blood groups, the red cells can be removed and the incompatible plasma safely infused.

Source of Plasma

Freshly collected blood is the ideal source of plasma. If fasting donors are used, as they should be, the prepared plasma will be clear and straw colored. However, if plasma is separated from blood during the first twenty-four hours after collection, occasionally a large quantity of fibrin will settle out. We have found it advisable to store blood from twenty-four to forty-eight hours before removing the plasma.

Out-dated bank blood is another source of plasma. If the optimum storage period is observed, plasma prepared from such blood will be almost as clear and free of hemoglobin as that prepared from fresh blood.

An almost inexhaustible source of blood for plasma exists in the hypertensive patients who are relieved by the withdrawal of 500 or 600 cc. of blood at intervals of from one to six months.

Preparation of Plasma

Until a few years ago there did not exist a satisfactory technique for the separation and storage of plasma in large quantities. There are many techniques available now: the lyophile process of Florsdorf and Mudd(32), the concentration method of Thalhimer(33), the method of drying in a vacuum at body temperature used by Edwards, Kay and Davie(34), and the simple aspiration of supernatant plasma from sedimented blood. All of these procedures, with the exception of the last, are more or less complicated, and, though satisfactory, are not adaptable to general use because of the cost and the need for special equipment and knowledge of the technique.

Early in our work it became evident to us that if plasma was to be generally available the technique for its preparation would have to be simple and aseptic. The Transfuso-Vac was found to be ideally suited to the aseptic collection of blood for plasma. The simple aspiration of supernatant plasma resulted in a poor yield and a cloudy plasma which developed a sediment of precipitated fibrin after several days' storage. We soon found that by centrifuging, the yield was greater and the plasma very clear if fasting blood was used. The sediment of precipitated fibrin continued to form until we found that it could be prevented by diluting plasma with equal parts of a diluent.

Our technique for the preparation and storage of plasma has been outlined in detail in *The Military Surgeon*. Blood is collected and citrated in the Transfuso-Vac. After storage from one to five days it is transferred to centrifuge bottles through a simple transfer system, care being taken *not to shake the bottle of blood or stir up the red cells* which have sedimented. This is accomplished through releasing the residual vacuum in the Transfuso-Vac by inserting a sterile needle in the free hole in the rubber stopper, *not in the air tube*. The transfer system is inserted in the free hole and a needle in the air tube opening. The bottle is carefully inverted and the blood allowed to run into the centrifuge bottle. The first 250 cc. centrifuge bottle will contain approximately 90 per cent red cells and 10 per cent plasma. The other two bottles will contain most of the plasma and very few red cells. We do not centrifuge the first bottle, but put it in the refrigerator to be diluted with salt solution and administered as cells if we have a patient with an anemia who does not need plasma. These cells should not be used if they are older than five days. The plasma in the other two bottles is separated by centrifuging at about 2000 r.p.m. for about one hour. When the centrifuge comes to rest a swirl of cells will, at times, be noted in the supernatant plasma. It is imperative that all cells be removed from plasma that may be stored for a long period. The centrifuge bottles are placed in a refrigerator overnight, so that all of the cells will settle out. The next morning the supernatant plasma is aspirated from the centrifuge bottles to storage bottles (PlasmaVacs), which contain 250 cc. of dextrose and salt solution in a vacuum. One cubic centimeter of 1 per cent merthiolate per 100 cc. of solution is added through the X mark in the rubber stopper as a preservative.

The final concentration of merthiolate will be 1-10,000. This has been found to be not only bacteriostatic but also bactericidal(35). Cultures of 301 plasmas prepared by this technique were found sterile in every instance. Six had traveled 37,000 miles through South America at room temperature and were found sterile after six months.

Merthiolate is an effective antiseptic in a concentration of 1-10,000 in plasma. There is no interaction between it and protein(36). As much as 50 cc. of 1 per cent solution of merthiolate has been injected intravenously in a single injection into a human subject(36). A total quantity of 180 cc. divided into five doses has been given to one person with no demonstrable toxic effects(36). Animals have received proportionately larger doses than humans without showing toxic effects(36).

A final concentration of 2.5 per cent dextrose in physiological salt solution was used as our first diluent. This was later changed to physiological salt and sodium citrate solution. Plasma stored in the latter diluent changed color and developed a black precipitate. These changes were not observed in plasma preserved at room temperature for 18 months in the dextrose diluent. We have concluded from these observations that dextrose in the diluent is advantageous.

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Storage of Plasma

A study has been made to determine the effect of storage on plasma; sterility during long storage, changes in the chemical constituents, effect of storage at room temperatures on the protein fractions, changes in color, and precipitates that form. These studies and details of the administration of plasma stored at room temperature for periods up to more than a year will be reported in detail in a later paper. Sufficient data have been collected for us to feel that certain general statements can be made at this time.

Contamination by micro-organisms has not occurred in more than 500 preparations of plasma, 301 of which were cultured. Botles of plasma preserved with merthiolate in a concentration of 1-10,000 have been exposed to the air at room temperature for periods up to six months. Frequent cultures have been found sterile.

Following the administration of 53 preserved plasmas, stored at room temperature for periods up to nine months, no reactions have been noted. Some of these plasmas were prepared from blood stored as whole blood for as long as eleven days, and contained considerable amounts of hemoglobin.

Changes in color have been found to be due to the reduction of free hemoglobin, which is present in some degree in all plasma.

Precipitates, other than fibrin, will appear in all preserved plasma after a month or so. The amount will vary, plasma prepared from non-fasting donor blood developing more precipitate than that prepared from fasting donor blood.

Through the courtesy of Scudder and Longworth of the Rockefeller Institute, the electrophoretic pattern of the plasma proteins in stored plasma one year old was studied. Six other bottles of preserved plasma were studied by them for sterility, pH, potassium, sodium and ammonia content. No significant change was noted.

The Use of Incompatible Plasma

The use of plasma as a substitute for whole blood has two great advantages. First, it is a means of preventing the wastage of blood in institutions where blood is stored. Second, it provides a therapeutic aid to the emergency treatment of shock and hemorrhage that is not ordinarily available in all institutions. If it were necessary to type and cross match plasma immediately before its use, one of the greatest advantages which it has would be lost.

Although the use of plasma without typing or cross matching is still a debatable question, nevertheless a sufficiently large number of infusions have been given to feel that it is at least as safe as the administration of whole blood. To date, thousands of transfusions of plasma to incompatibles have been given without a single report of a reaction ascribable to incompatability. The reaction rate from whole blood transfusions attributed to the use of incompatible blood is certainly much greater. DeGowan(37) reports incompatible reactions and 7 deaths in 3500 whole blood transfusions. Tiber(38) collected a series of 12,742 whole blood transfusions, with 22 fatal reactions. Many institutions have had incompatible reactions at one time or another, in spite of diligent care in typing and cross matching.

However, a procedure is being developed that will assure the safety of the administration of untyped plasma to incompatible recipients in every case regardless of quantity infused. The danger from the administration of incompatible plasma can only be from the use of the rare high titre plasma. To eliminate this occasional high titre plasma we are suggesting that the titre of all plasmas prepared be determined, and that those under 1 to 100 be used universally and those over that titre be segregated for use as type specific plasma. This procedure will permit the use of the majority of the plasma as universal plasma and eliminate any danger from the occasional high titre plasma.

Group AB plasma is perfect universal donor plasma, as neither agglutinin is present. Group O recipients are universal recipients of plasma because they have no agglutinogen in their red cells.

Group O recipients account for approximately 45 per cent of all recipients and can receive high titre plasma. Large quantities of incompatible plasma have been given safely to single recipients. The data will be reported in a subsequent paper.

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The Administration of Plasma

The same technique is followed in the administration of plasma as in the administration of whole blood. Filtration is essential, and the stainless steel filter now available is ideal for that purpose. It is unnecessary to warm plasma, as it can be administered at any temperature from refrigeration to body temperature. Typing and cross matching, so essential for the transfusion of whole blood, can be in part or wholly dispensed with. We have given 152 incompatible plasmas and 212 plasmas without knowing the blood group of donor or recipient. No reaction resembling an incompatible blood reaction has been noted.

There are times when the intravenous administration of plasma is impossible or impractical. This is particularly true in pediatrics. For that reason we have investigated the feasibility of the intramuscular route.

We have found that plasma is absorbed from the extra-vascular spaces almost as readily as physiological sodium chloride solution, and that when salt solution is not absorbed, plasma is not. Plasma is more readily absorbed from the muscle tissue than it is from subcutaneous tissue. Absorption probably occurs by way of the lymphatics, and possibly through the capillaries when the need is great. Discomfort from the intramuscular infusion of plasma seems to be no greater than that from salt solution.

The indication for transfusion in pediatrics is usually for plasma rather than for red cells. In our hospital, where this fact is recognized, the pediatrician—Dr. E. D. Andrews—often gives multiple infusions of plasma intramuscularly in the course of his daily rounds from a single bottle, using the same syringe and changing needles. If it were necessary to tranfuse whole blood or plasma intravenously, many cases in dire need of protein would undoubtedly not be tranfused. The simplicity of the intramuscular infusion increases the use of plasma in subjects whose veins are difficult or impossible to enter.

Reactions

Reactions following plasma infusions have been negligible, only 3 occurring in our series of 445 administrations—an incidence of .68 per cent. The three occurred almost consecutively, one plasma being given without reaction between the first and second reaction. All were typical pyrogen reactions, initiated by a chill, followed by a 2 to 4 degree rise in temperature, with a return to normal in about four hours. An investigation revealed the fact that the operating room force had been so busy that recipients' sets were not cleaned and sterilized immediately after use, but were allowed to soak in salt solution at room temperature for about forty-eight hours. Previous experience had taught us that reactions could be expected under these circumstances.

Only one reaction occurred following the administration of incompatible plasma. By chance it happened that compatible plasma had been administered to two of the three patients who had pyrogen reactions. The third reaction was so typically a pyrogen reaction that incompatibility was not considered.

Conclusions

1. Plasma is an ideal substitute for whole blood, particularly in emergencies.

2. The indication for transfusion is often for the plasma protein fraction rather than the cellular fraction.

3. In traumatic, operative or obstetrical shock, burns, infections or circulatory failure, when the red cell count is normal or above, the indication is for plasma instead of whole blood.

4. The conversion of out-dated bank blood to plasma prevents the wastage of blood and is an ideal source of plasma.

5. Although plasma should be stored at refrigeration temperature, it can be stored at room temperature and transported long distances with safety.

6. Merthiolate in a dilution of 1-10,000 has proved to be a satisfactory preservative.

7. The reaction rate following the administration of plasma is negligible in comparison with whole blood transfusion.

8. Plasma has been given to its incompatibles in a large series of cases without unfavorable reaction of any kind.

9. The intramuscular administration of plasma has been found effective when the intravenous administration is impossible. This is particularly true in pediatrics.

10. Blood banks are impractical in small institutions, whereas plasma banks are not only practical but when used regularly become almost indispensible.

PERSONALITY AND PSYCHOSIS

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Since he has been the beneficiary of a kindly evolution, *Homo sapiens* has fortunately attained a status through which he enjoys an incomparably greater control over his environment than do other zoological classes or species. From it he fabricates instruments that seem to assure his continued zoological supremacy. His superior intellect with its highly developed capacity for symbol utilization has, aided by his gregarious tendencies, brought emotional and spiritual satisfactions that in many respects make him stand out in great contrast to less fortunate species. In spite of his remarkable advances in these various spheres, man remains a biological organism. For that reason even such highly integrated functions and responses as striving, perceiving, thinking and feeling should be studied by the methods of biology, which in a broad sense is the study of organisms. It is in the terms of this science that the physician is primarily trained to think. That branch of biology that deals with the organism as a person is now often known as psychobiology—a biology of the personality, a study of its natural history. The question is at once prompted: What is the psychobiological entity which we know as the human personality? There are many conceptions of personality, and it is not easy to define what is meant by this term. Many definitions have been proposed, each discipline tending to construct one in the terms in which it is trained to think. Perhaps the psychobiologist may define it as that organization of constitutional, affective, ideational and conative capacities and tendencies which characterize the individual and largely determine his habitual patterns of behavior.

The study of the personality must be from both a genetic and a dynamic standpoint. As I have already said man is a biological organism. Any conception of personality must therefore include that of its biological basis and its determination through the genes and their structuralized biological history. The basis of the personality is primarily physical, organic, constitutional. The nucleus of this basis, the central design of the personality is sketched in the germ plasm by the history of the species and the instinctive drives and urges which have made its continuity possible. Of scarcely less modifiable form are the specific, individual patternings which have been received from more immediate lineage. While the organic background determines the general pattern according to which the personality is fabricated, yet it would appear that its particular characteristics are influenced much less by the constitutional than by the more dynamic conative and affective forces.

Personality, it is obvious, is the product of the total forces of the organism, ones that are exceedingly complex. To understand the workings of the organism, and therefore of the personality, one must have data from the chemist, the physicist, the biologist, the physiologist, the anthropologist, the sociologist and the psychologist. Of the various data those contributed by the psychiatrist are, we believe, the most comprehensive and informative. He possesses expert knowledge from certain of the fields mentioned, and we like to believe—perhaps at times without sufficient justification — that he possesses a certain acquaintance with them all. I believe that he more than others recognizes that psychology is not a distinctive science apart from physiology, anthropology, or even sociology.

It will at once be recognized that the genetic and dynamic personality forces are exceedingly complex if one considers such familiar psychobiological personality or energy tendencies as extraversion and introversion. He would find it difficult to construct a formulation of the factors and forces that determine these personality characteristics. Hereditary, constitutional factors are important, but are biochemical and other physiological ones excluded? Introversion, certainly, seems at times to result largely from external, psychological pressures. That psychological forces may exert great influence is shown by the fact that at times the introvert seems to masquerade under the guise of the extravert. Finding himself unable to secure the recognition he craves or to meet satisfactorily the demands of external reality, he succeeds by a great effort in turning his energy outward. In his effort to satisfy his need for recognition and develop extraverted characteristics the introvert may

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overcompensate and become arrogant and domineering. The true nature of the personality will, however, usually ultimately betray itself, particularly if this compensation breaks in a psychotic expression. Parenthetically it may be added that in the opinion of many psychiatrists a hereditary introversion is more apt to go on to autistic thinking than is that which is more clearly psychologically determined.

Whether one thinks in terms of Freudian concepts and conceives of the development of the personality as one of progress in the individual's sex interests or whether he is more functional and looks upon personality development as the unfolding of preformed potentialities, with the original design ever being remolded by the enregistration of experience, he will agree that there is an evolution of the personality. Perhaps more and more is the psychiatrist coming to believe that the dynamics of the personality, the forces of its development, lie in the interaction between the individual and an environment, the forces of which are social and cultural—the individual being a psychobiological organism possessing both innate biological drives and affective needs. Not only are there constant frustrations in the unceasing struggle between this psychobiological organism and the forces of the culturally-conditioned environment that surrounds and penetrates it, but there are incompatibilities in its own values. There are the primary urges common to all, plus the drives, tendencies and needs peculiar to the individual—some of which he may recognize, but most of which contribute to the structure of the personality as subtly and as unapparently as do the processes of metabolism to the physical growth of the organism. In view of the total complex of genetic factors and dynamic forces that contribute to the personality it is not surprising that the product is not always desirably integrated. Indeed a complete harmony of integration is scarcely possible or perhaps essential, since the personality which operates happily, efficiently and without tension and adjusts smoothly in its relation with others meets the requirements for a successful career so far as native endowment and opportunities permit. If, however, the result is to be harmony rather than discord, the planning and orchestration of all the elements that contribute to the personality require a discerning knowledge of the orchestral instruments.

We have spoken of the human personality as a psychobiological entity, as the integrated product of constitutional, affective, ideational, and conative or striving capacities and tendencies. We have spoken in very general terms of the factors that enter into it and urged that the method of approach to its study be biological, which means that the life history and experiences of the personality should be studied as a part of the natural history of the organism as a person. This implies that inner experiences, external influences, instinctive drives and their frustration, psychological needs and stresses of the personality and the mechanisms by which the personality reacts to these demands and strains are biological facts no less than psychological states, although they must be studied more in terms of the whole organism. There are facts of inner experience as well as of outer observation. Although psychological in nature, thoughts, emotions and strivings become no less valid scientific facts than chemical equations or tendon reflexes. Approaching his problem from a genetic and dynamic point of view one must seek to understand the individual as a person in terms of his own life history with his specific emotional problems. One should analyze the personality and formulate in their proper relations the constitutional, somatogenic, psychogenic and social factors that have been operative in producing the total personality reaction, including that of the psychosis. With an analytic historical perspective of the personality, experiences and events can be brought into etiological relationship with its present status, whether that is one of successful adjustment or is characterized by disturbing psychopathology. In both instances the personality is a continuum and one sees genetic-dynamic factors working out into a natural culmination. Psychotic manifestations, therefore, are not queer additions to the so-called "normal" personality, but are specific aspects of psycho-physiological developments which, in essence, are identical in the normal and in the pathological case.

The psychiatrist who approaches the study of the personality with the assumption that all manifestations of behavior are the expressions of fundamental, underlying psychobiological dynamics comes to look upon mental disease as an undesirable, socially impracticable functioning of the personality. This maladaptive type of personality activity is, however, the logical outcome of imprudent, inexpedient methods or mechanisms designed to satisfy psychological needs or purposes. The gestaltists speak of the behavior of the individual as the resultant of stresses, tensions or valencies which exist in the total situation, and of any particular reaction as a means whereby such stresses may be relieved. The psychobiological psychiatrist has a comparable concept in mind when, as just indicated, he speaks of behavior as the expression of psychobiological dynamics.

The psychiatrist, then, is concerned primarily with the behavior of a psychobiological organism, the total reaction of which may be defined as the personality. When in studying this personality he discovers unusual psychobiological reactions he applies the term symptoms to them if they stand out so conspicuously or are so unusual that they are considered abnormal. Really, however, like other manifestations of the psychobiological organism these symptoms, these personality expressions, are normal in the sense that they are natural or logical. Symptoms, then, are logical but extreme psychobiological reactions, the exaggeration of processes that have long been operative in the individual—processes, however, which because they did not adequately meet the emotional and other needs for which they were created became intensified until finally they came to stand out so strikingly as to be called symptoms, and, if disregardful of reality, called psychotic symptoms. Long before the appearance of these psychotic symptoms there should, therefore, have been less striking manifestations of the psychobiological organism's effort to meet its emotional and instinctive needs. Since earlier in this paper it was stated that the human personality *is* the psychobiological entity the efforts to meet these needs must long have been expressed through the personality. This, as a matter of fact, is what is constantly discovered in our patients when we observe and analyze their personality characteristics and ascertain the dynamics of the personality formation. In both the pre-psychotic and psychotic life there exist psychopathological processes and behavior which the psychiatrist will not be content merely to describe or to classify, but the functions of which he will attempt to determine as they relate to the goals of the psychobiological organism or personality and as they are expressed in the form of character traits. He will attempt also to analyze and reconstruct in their flow of dynamic relationship the common factors that have been operating in both personality or character traits and in the psychosis. In both the pre-psychotic life and in the psychotic symptom there will be revealed the way the patient has reacted to specific personality needs, to the demands which life has made upon him. The patient's history will show that the psychological techniques which he was accustomed to employ during his pre-psychotic life in dealing with the problems which confronted him are fundamentally the same as those which later created the psychotic symptom. The same mental mechanisms, the same psychological goals which during the psychosis become exposed with obvious transparency were active in determining character traits long before the psychosis appeared—or rather long before they so disturbed the individual's social adjustment that he was termed psychotic. For after all is not the psychosis merely a way of life—a way which is designed to afford a more tolerable solution for the particular problems with which the individual is confronted, but a way which so impairs his assimilation as a social unit that society is apt to segregate him? Is not the psychosis in effect a way of working out basic emotional problems and difficulties? If the psychosis is a way of life adopted to meet problems too difficult to be successfully met by more socialized, more conventional methods, the psychiatrist will scarcely seek to make a "diagnosis" in terms of some disease entity. Rather will he attempt to analyze the complicated forces that have contributed to the organization of the personality, and the diagnosis will consist of a formulation of the problems to be met, of the techniques by which the individual attempted to meet them, and of the results to which these techniques led. The formulation of the patient's clinical picture is therefore in terms of the familiar forces of everyday human life. To be sure, the physical state of the individual may influence his ability to deal with these common problems and may stimulate reactions of a deeper psychological nature. The formulation, however, is the reconstruction through a genetic approach of the patient's inner life history.

If the wounds, dilemmas and frustrations which life brings the individual produce problems so difficult and emotional needs so demanding that they can be met only by methods which impair or destroy one's social assimilation—then evidence of attempts to deal with these problems and needs must presumably exist long before such extreme techniques are employed. The insights afforded by psychiatry reveal clearly that this is the case, that psychological devices designed to meet its needs have long been shaping the personality along the lines which later in the psychosis stand out in such misshapen form. The insights contributed by psychiatry reveal, too, that a single meaningful process runs through both the pre-psychotic and the psychotic personality. In both there is a constant effort to work out deep-seated emotional problems and difficulties. The psychosis discloses more sharply both the attitudes which have been subtly developing for years in response to deeply seated psychological needs and the manner in which the personality has attempted to meet its stresses. The embryology of the psychosis may be studied in the pre-psychotic personality of the patient. The genetic factors may often be detected in the early pattern and responsive tendencies characteristic of the individual personality. When the significance of this pattern is discovered, the psychosis comes to have a logical place in the pattern's evolution. Personality characteristics and neurotic or psychotic symptoms frequently represent allied efforts toward the same goal. The same psychological theme is to be found running through personality, character traits and psychosis. Like more narrowly biological phenomena, such as fever, inflammation and other morbid processes, many personality characteristics which are conspicuously exaggerated and fixed, and most psychoses are defensive, protective and reparative in purpose. Both such personality characteristics and the psychosis are expressions of the psychobiological organism's attempt to effect an adjustment to the interplay of psychological, social and physiological forces impinging upon it, the psychosis often representing a progressive evolution of the personality's measures. When the significance of the patient's personality pattern is ascertained, the psychosis is seen to have a logical place in the evolution of that pattern. The symptom, whether it be the delusion, the hallucination in the psychosis, or the compulsive act or hysterical paralysis in the psychoneuroses, performs a function in the life of the patient. A study of the personality will disclose that its striking characteristics also serve some function. Just as the symptom is a psychobiological reaction of the total organism at the mental level and should be approached in terms of dynamic concepts, so the personality too should be studied by the same methods to ascertain the forces which determined its characteristics. A study of the personality pattern, like that of the psychotic symptom, should reveal the problems of the individual and the methods by which he is struggling to meet them.

Reference was made to the fact that the same psychological theme runs through both personality and psychosis, molding the former and determining the nature of the latter. A sense of insecurity, for example, may be created during the early development stage of the personality, perhaps because the child is illegitimate, perhaps because a mother's assurances of affection are lacking, or because for some other reason he fails to attain a feeling of "belongingness". By kindergarten age the insecure child may be tense, restless, and "nervous". Then or a little later in childhood when confronted with tasks which are unusually hard he becomes panicky, and either gives up quickly or will not attempt anything that on its surface seems difficult. He constantly seeks the reassurance of praise, of marks, of success, but never seems satisfied. He may run away from every situation that involves competition, perhaps reverting to thumb-sucking or other childish habit. He is usually bashful in the presence of others. Even with the arrival of adult years the insecure person continues timid and seeks the reassurance or approval of others. He is cautious, conservative, frugal, lacks aggressiveness, is apprehensive, and shrinks from responsibility. Decisions are made with difficulty. Changes requiring readjustments provoke tension and anxiety. Security is sought through various "faiths". If he is religious his religion contains much family symbolism—God is a father who watches over him. Provided there are no other serious personality problems, and the individual through religion or other supporting means obtains a certain feeling of security, he may pass through life without any seriously disturbing incident in his mental health, although with less vocational success than native intellectual endowment warrants. If, however, the source of support is removed by loss of position, by death of the spouse or by removal of other sustaining foundation, then the sense of security may be destroyed. Especially is this apt to happen if the misfortune occurs at the involutional period when new physiological and psychological burdens are imposed. Extensive changes are then taking place in the endocrine and vegetative systems. Perhaps life has not brought either the success or the satisfaction that hope had cherished. The fact that opportunity no longer exists for repairing old errors or achieving new successes creates a sense of frustration and increases the feeling of insecurity. It is not surprising, therefore, that under these additional psychological and biological burdens, this conspiracy of dynamic factors, the life-long insecurity of personality passes into depresion, apprehension, anxiety, ideas of death and hypochondriacal delusions.

Frequently characteristics that permeate and color the entire life of the individual, although arising from emotional needs, develop less directly than do those that express a deeply seated insecurity of personality. For example a desire for personal value, for recognition, may evoke characteristics aimed to win self-esteem. The dominant motive may be a struggle for attention, distinction, fame or social position. If combined with intellectual capacity and an environment presenting favorable opportunity this drive for recognition constituting a dynamic personality factor may lead to outstanding success and leadership. If frustrated, however, a fictitious substitute designed to meet this need may be developed and psychotic ideas of grandeur arise.

Of much importance in determining personality characteristics are those mechanisms of defence known as reaction-formations. These reactions arise from a persistent wish not to face the unconscious basis of our motives, and represent an effort to conceal and deny them. Basic personality characteristics which fail to meet self-imposed requirements, impulses and drives that cannot be consciously acknowledged, along with innate biological bases, determine psychobiological reactions which collectively we call the personality. Reaction-formations, through their function of excluding repudiated drives and desires from overt expression or conscious recognition, play an important part in personality formation. Overstrict character traits, for example, are often reaction-formations against forbidden tendencies, drives or desires. A timid attitude may mask hostility and irritability. Such precautionary measures designed to restrain certain impulses lead to the intensification of opposite types of behavior. A defence is secured by continual testimony to the contrary. "The Lady doth protest too much, methinks" was said of the Queen in *Hamlet*. Closely allied to the mechanism of reaction-formation is that by which men fortify themselves against deeply seated fears and insecurities by never admitting any misgivings or mistakes—not even to themselves.

Reaction-formations can scarcely be called pathological unless they function with unusual force or frequency; yet these, like other personality patterns designed to satisfy some deeply seated emotional need, tend to become more stereotyped and extreme. Finally if the task of maintaining them becomes too great the effort may fail and the prohibited desires and drives come to expression in so overt and unrestrained a form that the behavior is called psychotic. Again we see the same psychological theme running through personality and phychosis.

In spite of the apparent stress in the latter part of this paper on the psychological components of personality, I wish to emphasize that the personality is the product of the total forces of the organism and that therefore those expressions of it which we designate as psychoses are likewise their product. There are those who believe that the psychoses are diseases, all of which are variants of the same disease process; that the causative agent is a toxic body; and that the study of them is through the spheres of biochemistry and pharmacology. Such factors cannot be ignored, but they constitute only one phase of the problem. The nature and content of the psychoses are determined by the totality of the psychobiological organism, including its past experiences.

Finally, to paraphrase that delightful psychiatric writer, Macfie Campbell: The human personality may be studied as a complicated reactive mechanism or as a system of spiritual forces. The latter, it seems to me, should not be excluded from the concepts of an inclusive psychobiology.

MACROCYTIC ANEMIA IN EXTREMIS

With Case Report

Frank B. Marsh, M. D.

Salisbury

The subject of anemia remains a very interesting one despite the fact that, in the past several years, it has been the topic of no small amount of medical literature and the basis for a great deal of discussion at medical meetings.

Of particular interest is the macrocytic type of anemia about which, until a few years ago, we knew very little. The brilliant discoveries made in regard to the mechanism whereby this type of anemia is produced, and the perfection of an effective method of treating the disease constitute one of the high lights of recent medical advance. It is to W. B. Castle, George R. Minot, George H. Whipple, and W. P. Murphy that a great part of the credit is due for this outstanding contribution to medical science.

While it is true that much discussion has been given to the etiology, the diagnosis, and the effectiveness of the various preparations in the treatment of the disease, very little space has been devoted to the treatment of those patients who through neglect, carelessness, or ignorance have progressed into the desperate, critical phase of the disease. At this stage the patient's blood picture is ominous. The number of red cells is reduced below a million; the hemoglobin is so low that it cannot be correctly estimated. The white count is found to be around 3000; the thrombocytes are considerably decreased, and the plasma protein is reduced below the edema level. The color index is 1.3 plus; the volume index approximates 1.4 ; the icteric index is above normal, and the percentage of reticulocytes below normal. The erythrocytes vary much in size, shape, and hemoglobin content; the macrocytic, hyperchromic type of erythrocyte predominates. An increased fragility of the red cells in hypotonic salt solution is indicated by the fact that hemolysis begins at about 0.38 per cent NaCL and is complete at 0.30 per cent. It is in behalf of the patient who presents these blood findings, along with the symptoms and physical signs to be described later, that I offer these thoughts for your consideration.

Inasmuch as pernicious anemia, or idiopathic macrocytic hyperchromic anemia, is the typical example of this kind of anemia, I shall refer to this type of the disorder in continuing this discussion.

In the typical untreated case of pernicious anemia, there is a very definite sequence of events. Owing to the lack of the intrinsic factor, the conversion of the extrinsic factor into the Erythrocyte Maturation Factor (or hematopoietic substance) is prevented. Thus the erythrocyte manufacturing centers are deprived of that factor which determines the growth of the young red cell into the fully functioning matured erythrocyte. As a result of the arrest in the process of development, two unfavorable conditions arise: first, the red cells, being immature, are incapable of normal functional activity; and second, being imperfect in development, the cells lack the normal stability and are more readily and rapidly hemolyzed.

As these imperfect red cells fail to function and as they become hemolyzed too rapidly, the demand set up by the tissues gives rise to a more rapid outpouring of even less matured cells which are, in turn, more susceptible to hemolysis. If this process continues the producing centers must sooner or later arrive at the point of exhaustion. In the more advanced stage of the disease the patient presents the features of a hemolytic anemia.

In considering the cause of the hypoproteinemia one may say that starvation probably plays the most important part; for in the advanced cases of this type of anemia, pronounced gastro-intestinal disturbances prevent the digestion, absorption, and assimilation of what little food may be ingested. No doubt the associated disturbances of metabolism result in the interference with the formation of the normal plasma proteins. Whether there is any specific hormone or any other factor which may play a part in this regard cannot be definitely stated at this time.

With these facts in mind, it is easy to visualize the mechanism producing the symp-

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Read before the Rowan County Medical Society, December 1, 1939.

toms and the clinical manifestations which arise in the course of the disease.

Inasmuch as the disease affects the three systems—the hematopoietic, the gastro-intestinal, and the neurologic—the initial symptoms may be referable to all of these systems or to any combination of them. The weakness, fatigability, and breathlessness are most probably the result of the anemia. The numbness, tingling, and later the ataxia, may result either from the anemia or from the lack of specific neurotropic hormones, or from a combination of these two factors. The anorexia, glossitis, nausea, vomiting, and later the diarrhea, are probably due to the absence of Vitamin B_1 and other B fractions, and possibly to the lack of some extrinsic factor or some intrinsic factor as yet unrecognized, which is necessary for the proper functioning of the gastro-intestinal tract. In the later stages of the disease the disturbed gastro-intestinal function—the failure to retain, digest, and assimilate the ingested food—contributes much in aggravating the symptoms themselves.

As the patient with pernicious anemia approaches the terminal phase—when the bone marrow approaches the stage of exhaustion—the symptoms and signs indicate that the patient is in a critical condition. The patient is prostrated, the weakness is pronounced, there is dyspnea on the slightest exertion. The patient is irrational at times, and frequently is disoriented. The lack of appetite is complete, nausea is constant, vomiting is frequent, and diarrhea is often pronounced and intractable. Incoordination characterizes the muscular action. The skin has the characteristic yellowish tint and the sclera have the peculiar pearly appearance. The patient has a low-grade fever, usually accompanied by an afternoon rise to about 101 degrees. The pulse is soft, compressible, and usually increased moderately in rate. The face, eyelids, ankles, and sometimes the entire body, are definitely edematous as a result of the hypoproteinemia. It is at this stage that treatment must be given promptly and effectively to save the patient's life. If the treatment is immediately and satisfactorily administered, the patient may be restored to a remarkable degree of health and usefulness to himself and his family.

In the treatment of the patient in such a condition, two things are of paramount importance. These are: (1) the introduction into the patient's body of sufficient EMF to meet the urgent requirements; and (2) the restoration of the plasma protein to such a level that body functions can be quickly and effectively reestablished.

It is quite important to be sure that the quantity of the EMF being administered is sufficient and adequate. It is to be stated emphatically that the amount that is necessary to be effective is many times that which is required in the moderately advanced case of this type of anemia. It is no time to be conservative in the dosage, for one has no time in which to await results and increase the dose later. It is my opinion that about 20 units of concentrated liver extract given intramuscularly daily for three doses, followed by the same amount every other day for four doses, and then every week for several doses will result in remarkable improvement even in the most advanced cases, when given in conjunction with the rest of the necessary treatment. Undoubtedly, the explanation for the very large amount of the EMF necessary in these cases is two-fold: first, there is an associated liver damage; and second, the body begins to replenish the reserve which under normal circumstances is stored in the liver, thus taking up from the circulation a considerable portion of the amount injected.

There are three avenues of restoring the plasma protein. The gastro-intestinal route is, of course, to be preferred. In such a case as the one under discussion, this method of approach is entirely too slow and too ineffective even to be considered. Transfusion, either by the direct or indirect route, is quite effective and, as a general rule, the method of first choice. There may arise, however, certain circumstances which might make the intravenous administration of blood plasma more desirable than the whole blood. This is particularly true in those cases in which the anemia is pronounced, the hypoproteinemia is marked, and the need for serum protein is great. In such cases it is urgently necessary that the hematopoietic system be stimulated to its greatest capacity in the production of the erythrocytes. It is, therefore, undesirable to introduce any factor which may depress this function or fail to produce the maximal stimulation of the blood-making mechanism. It is held by some writers(1) that the massive introduction of whole blood into the circulation results in a depression of hematopoiesis. It is thought by others(2) that small transfusions are unquestionably more stimulating to the hematopoietic centers than large transfusions. Assuming that these opinions are correct, we must conclude that the introduction of some whole blood is helpful, but that in addition a larger amount of separated plasma is indicated. By such a method a sufficient amount of the plasma may be introduced (without harmful effect) to restore normal osmotic pressure and relieve the physiological disturbances upon which many of the symptoms depend.

This brings us to the third method of approach in restoring the plasma protein—namely, the subcutaneous or the intramuscular route. This method, of course, is available only when we are administering the plasma separated from the cells. This, in my opinion, is a very practical and desirable method and, from the standpoint of experience, has proved equally as effective and satisfactory as the intravenous route(3). It is astounding to the uninitiated how rapidly the plasma is absorbed when introduced by gravity into the muscles of the thigh. When the speed of its absorption is witnessed, it is easy to understand why this method of administration, except in profound shock and severe hemorrhage, equals in efficiency the intravenous route. In some transfusions, as in the case to be discussed later, even with the most careful grouping, matching, and cross matching, the post-transfusion chill cannot be avoided. By the intramuscular injection of serum diluted in an equal portion of five per cent dextrose solution, the hypoproteinemia may be overcome and the reactions associated with the transfusion can be avoided. While this last statement may be questioned by many, it has been true in our experience; for in a fairly large series of injections we have not seen the slightest reaction follow(4 5).

There are two advantages of using whole blood which cannot be gainsaid. The first is that there is introduced in addition to the plasma a given quantity of cells which are capable of immediate and complete functional activity. This is not, however, a very important consideration. The second is that there is introduced into the patient's system a given amount of hemoglobin which will become available when the transfused cells are normally hemolyzed. This hemoglobin can be utilized in the construction of the new erythrocytes which by that time are being manufactured quite rapidly because of the restored function of the hematopoietic centers.

As adjuncts to the therapy described above I would suggest: thiamin chloride in large doses, intramuscularly; a high protein diet after the digestive function is restored; riboflavin and nicotinic acid when the tolerance of the stomach is obtained; dilute hydrochloric acid, 2 to 4 cc. doses, after each meal; and iron, if the "hemoglobin lag" manifests itself.

The response from such therapy is spectacular and gratifying to the physician.

Case Report

Mrs. J. D. H., a 63 year old white widow, was admitted to the Rowan Memorial Hospital on November 18, 1938, complaining of anorexia, nausea, vomiting, diarrhea, and weakness.

History: The patient had been known to have a macrocytic, hyperchromic type of anemia since December, 1932. As long as she took the prescribed dose of anti-anemic factor she did very well, maintained a fairly good blood count, and, except for anorexia and weakness, was free from symptoms. On several occasions she became lax in following directions and relapsed into such an anemic state that transfusions were necessary before any response to liver or ventriculin could be obtained. The transfusions

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1. Kh. Kh. Vlados: Clinical Evaluation of Mechanism of Blood Transfusion, Klinicheskaya Meditsina, Moscow, 15:1268 (Nos. 10-11); abstracted, J. A. M. A., 110:1242 (April 9) 1938.
2. Harold W. Jones, Philadephia, Pa. Personal Communication, Feb. 1940.
3. The blood was collected and the plasma separated by the method suggested and devised by Dr. John Elliott, Rowan Memorial Hospital, Salisbury, N. C.
4. This work represents a part of the research begun in 1938 and now being carried on by Dr. John Elliott, the writer, and other members of the staff of the Rowan Memorial Hospital (Tatum, W. L. et al. A Technique for the Preparation of a Substitute for Whole Blood Adaptable for Use During War Conditions. The Military Surgeon Vol. 85, No. 6, December 1939; the Use of Plasma as a Substitute for Whole Blood, North Carolina Medical Journal, 1:283 (June) 1940).
5. Type I plasma, containing no agglutinins, and Type IV, containing agglutinins of low titre, are compatible with all four types of blood and have been used for patients of all four blood types. While Type II and Type III plasma have been administered to presumably incompatible types, without reaction, we advise, awaiting further investigation, the administration of the respective type plasma to those recipients of Types II and III. Type IV recipients whose blood contains no agglutinogens can receive plasma regardless of type.

necessitated by these relapses were given on March 4, 1933; April 28, 1935; March 15, 1936; May 10, September 25, and November 1, 2, and 4, 1938. Following each transfusion the patient had a chill and a rise of temperature. Prior to May, 1938, she had always responded nicely to administration of the anti-anemic factor following the transfusions. Practically no improvement followed the transfusions given in May and September, although more intensive specific therapy was instituted. Following the three transfusions given in November, the blood regeneration was apparently depressed rather than stimulated.

The patient's condition continued to become worse. The weakness became extreme; her appetite failed completely; nausea was constant; vomiting occurred frequently; diarrhea was persistent and intractable. Breathlessness was present on the slightest exertion, and edema of a moderate degree developed, affecting the face, eyelids, and extremities. There were periods in which she was irrational and disoriented, and she appeared so ill at the time of her admission that the attending physician, as well as the family, despaired of her life.

The patient's past history was irrelevant except for the fact that she had been weak, nervous, and sleepless for several years before the diagnosis of anemia was made. She had had no energy or endurance, although she appeared well nourished. Her appetite had been quite poor, and she had not eaten a well balanced or sufficient diet for some time. She had been attended by physicians in her home town and in Baltimore, Asheville, and Philadelphia. Each time a diagnosis of nervous exhaustion was made, inasmuch as no organic trouble could be found.

The family, marital, menstrual, and social history are all irrelevant.

Physical Examination: The patient was irrational, disoriented, fretful and peevish. There was a moderate degree of edema of the face, eyelids, and extremities. The color of the skin and mucous membrane was quite pale and not subicteric. There were two or three questionable teeth, which had been pronounced healthy by the dentist not long before. The tongue was rather smooth and pale. The heart was found to be slightly enlarged to the left. There was a soft blowing systolic murmur heard at the apex. The abdomen appeared negative except for an indefinite mass which was felt in the epigastrium; it apparently moved with respirations, and was not tender or painful. The spleen was not palpable. The pulse rate was 90. The blood pressure was found to be 120/70. The reflexes were normal; no ankle or patella clonus or Babinski was obtained.

Clinical Course: Upon admission the patient was given morphine and atropine for nausea, vomiting, and diarrhea. Under the effect of the opiate she was able to retain fluids fairly well and her diarrhea was checked considerably. On the next day she was given intramuscularly 300 cc. of blood plasma with 1000 cc. of 2½ per cent glucose in normal saline solution. Six cubic centimeters of concentrated liver extract (Lilly) was added to the infusion.

Two days later an infusion was given, similar to the previous one except that 10 cc. of the concentrated liver extract was used instead of 6 cc. No reaction followed either of these injections. During the meantime the patient had been taking a little more liquid nourishment and had not been so nauseated or had so many stools. The face was slightly more edematous. The pulse had become weaker and of poorer quality.

During the next three days the patient continued to lose ground and appeared to be rapidly approaching the end. On November 25 a transfusion of 500 cc. of citrated blood was given, which was followed by a chill and a rise in temperature to 102 degrees.

By November 27 the patient appeared to be slightly improved. She ate a little breakfast and seemed to enjoy it. The edema of the face was about gone at this time, but the pallor persisted. The patient appeared considerably improved by November 30. The blood count on that day indicated a definite change for the better. The bowels moved more naturally than for weeks previously.

On December 3 the patient developed a phlebitis in the right femoral vein. Despite this her blood count and blood findings continued to improve. The accompanying graph (Fig. 1) shows the changes in the red and white cell count, the hemoglobin, and the percentage of reticulocytes; and the day of administration, and the quantity of serum, blood, and liver extract given.

At the time of her discharge (December 15, 1938) the patient had a fair appetite, was no longer nauseated or vomiting, and had ceased to have diarrhea. The color of

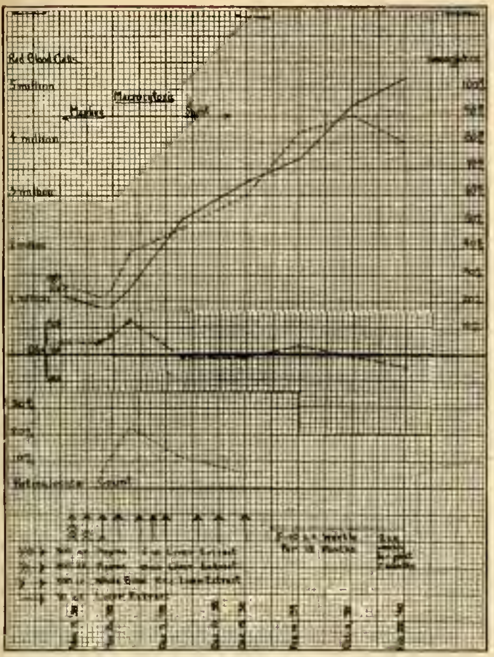

Figure 1. Graph showing increase in Red Blood Cells, Hemoglobin, Reticulocyte Count and the corresponding drop in Color Index with the amount and date of administration of Plasma, Whole Blood and Liver Extract from November 1938 to February 1940.

the skin and mucous membranes was much improved. The right limb was still swollen as a result of the phlebitis. The temperature, pulse, and respirations were normal. There was no longer any edema of the face or other parts. She appeared much stronger, was clear mentally, and was much more comfortable in every way.

Conclusions

1. Macrocytic, hyperchromic anemia, even when the patient appears in extremis, is a condition amenable to treatment if treated promptly, efficiently, and in such a way as to meet the physiological requirements.

2. The dose of the Erythrocyte Maturation Factor must be considerably larger than the dose necessary for the moderately advanced case.

3. In the presence of a definite hypoproteinemia the restoration of the plasma protein is an important part of the treatment, but only as a supportive measure while the Erythrocyte Maturation Factor is becoming effective.

4. To avoid depression of the hematopoietic centers it is advisable to administer a small transfusion, giving the bulk of the serum protein in the form of intravenous or intramuscular plasma diluted with an equal portion of five per cent solution of glucose in distilled water.

ALBUMINOUS EXPECTORATION

With Report of a Case

ELBERT A. MACMILLAN, M. D.

WINSTON-SALEM

The purpose of this paper is to review briefly a rare but serious complication of thoracentesis and to present a case. In 1902 Riesman(1) reported in some detail a case of albuminous expectoration following thoracentesis and reviewed the literature until that date. The case reports until that time were almost entirely in the foreign literature, and it may be said that Riesman introduced the subject to the profession in this country. A search of the literature has not revealed a reported case since Riesman's paper.

It was my experience to encounter this distressing complication in a thoracentesis done in a case of pleurisy with effusion. Because of the rareness of the condition, little attention is given to its possibility in the usual textbooks of medicine.

The complication occurs most frequently in cases of acute effusion and is characterized by profuse expectoration which develops within thirty minutes to eighteen hours after thoracentesis has been done. There is usually a period of relief following the removal of fluid, with a subsequent sudden onset of coughing and expectoration. In Riesman's case the onset was during the last stages of the thoracentesis. In the case to be reported, the interval between the end of the procedure and the onset of expectoration was thirty minutes. The degree of dyspnea associated with the expectoration is in relation to the amount of fluid expectorated. This may vary from a small amount to several hundred cubic centimeters. Death may result in certain extreme cases, though recovery usually occurs in a few hours.

Report of Case

D. P., aged twenty-eight years, a colored female school teacher, had been well until

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1. Riesman, David, in The American Journal of the Medical Sciences, April, 1902.

the first week of February, 1938, when she began to cough and to complain of acute pain in the left side of the chest.

Past Medical History: Her general health had been good. She had had an appendectomy in 1931, a tonsillectomy in 1935.

Family History: Negative for familial disease.

Present Illness: She had been able to attend regularly to her duties as a school teacher until the onset of the symptoms described above. On the first examination she was found to be suffering acutely with pain in the left side of the chest. The respiratory movements were decreased on the affected side. There were no changes in the percussion note nor in vocal fremitus. There was a faintly heard pleural friction rub in the left mid-axilla. The temperature was 99.6 F., the pulse rate 90, the respiratory rate 22. The blood pressure was 110/76. A diagnosis of pleurisy was made. The affected side of the chest was immobilized with adhesive strapping, and strict bed rest was advised. There was symptomatic improvement for several days, but after ten days reexamination revealed that a pleural effusion had developed on the left side. The mediastinum showed a slight shift to the right, and percussion revealed a flat note posteriorly, from the scapular angle downwards. Breath sounds were not heard in this area. On March 2, 1938, chest x-rays were made at the Forsyth County Sanatorium by Dr. Paul A. Yoder. This examination confirmed the presence of a massive left pleural effusion with a shift of the mediastinum. No demonstrable intra-pulmonary lesion could be seen. A one plus Mantoux was found to be present at this time. Thoracentesis was advised in case dyspnea developed. During the following week there was evidence of increase in the size of the effusion, and hospitalization for thoracentesis was advised. Accordingly, the patient was admitted to the City Memorial Hospital at 1:10 p. m. on March 9, 1938. At the time of her admission the temperature was 98.2°F., pulse 110, respirations 26. At 4:30 p.m. thoracentesis was done, the tap being made in the seventh interspace in the posterior axillary line. Amber, frothy fluid was obtained readily. 1500 cc. of fluid was removed, the patient showing no sign of reaction. She was able to breathe more easily at once. About thirty minutes later, however, she began to cough, and to expectorate an increasing amount of thick, foamy fluid. At 5:30 p.m. her temperature had gone to 104°F. and the pulse rate was 148. She was breathing with difficulty and there was marked cyanosis of the mucous membranes. The thick fluid continued to be expectorated until eventually a total of 650 cc. was collected. A hypodermic injection containing morphine sulphate, gr. 1/6, and atropine sulphate, gr. 1/150 was given within a few minutes after the difficulty commenced, and repeated after one and one-half hours. A short time after the second hypodermic the expectoration ceased completely and the patient became comfortable. The temperature dropped during the night until it became normal by early morning.

The patient made an uneventful recovery from this point. She suffered no further respiratory embarrassment, and within a period of three weeks there was almost complete resorption of the remaining pleural transudate. She has now gained twenty pounds in weight and is again in excellent general health.

The aspirated fluid was amber and frothy, and coagulated upon standing. It coagulated into a solid mass upon boiling. The specific gravity was found to be 1.020. The reaction was alkaline.

The expectorated fluid was very similar in characteristics to the fluid removed by the thoracentesis. It, too, was amber in color and was found to coagulate upon standing. Its specific gravity was 1.020, its reaction alkaline, and it coagulated upon boiling. No blood was present in either the aspirated or the expectorated fluid.

Riesman has suggested the term "congestion by recoil" as a means of describing what occurs in the compressed lung, suddenly allowed to expand as the pleural fluid is removed. Musser(2) agrees with this explanation, and disagrees with Cohnheim's view that the transudation of fluid is accounted for by degenerative changes in the vessel walls as a result of prolonged compression.

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2. Musser, John H.: Diseases of the Bronchii, Lungs and Pleura, Philadelphia. W. B. Saunders and Company.

The true explanation probably is that the pulmonary vessels, suddenly relieved of compression, become permeable to the blood plasma, which flows out into the tissue spaces to a degree that interferes with pulmonary function and results in dyspnea and expectoration. Capps(3) expresses the mechanism as follows: "The pathology is somewhat obscure, but an important etiological factor is the intense congestion of the retracted or atelectatic lung after the release of compressing fluid." Capps recommends on theoretical grounds the injection of air to replace the fluid in a patient who begins to show signs of impending trouble during the course of a thoracentesis.

Dr. P. A. Yoder(4) states that he has performed approximately 1500 thoracenteses without witnessing this complication. He states that he immediately ceases to remove fluid when he observes a cough or any evidence of respiratory embarrassment. He makes it a practice never to remove fluid rapidly or in a large quantity at a single sitting.

It does appear that these two factors are important in the production of albuminous expectoration, and that we are seeing fewer cases now because of increased respect for the procedure of thoracentesis. In the case presented, 1500 cc. of fluid was removed at one sitting, and in a relatively short time. In most of the cases reported in the literature, at least this amount had been removed, and in some instances as much as 5000 cc. It would appear wise to keep in mind the possibility of this rare complication, and to remove the fluid slowly, and in small quantities. The first sign of cough or distress during thoracentesis should be sufficient indication to stop the procedure.

Summary: Albuminous expectoration, a rare complication of thoracentesis, has been discussed, and a case presented. It is concluded that this complication may follow the removal of a large amount of fluid in a relatively short period. Cough and respiratory distress, though not observed in the case reported, should be regarded as indications for cessation of the thoracentesis.

3. Capps, Joseph A., in The Oxford Medicine, New York, Oxford University Press, Vol. II, pp. 163-164.
4. Yoder, P. A.: Personal communication to the author.

THE DIAGNOSIS AND MANAGEMENT OF ASYMPTOMATIC UNCOMPLICATED SYPHILITIC AORTITIS

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Heart disease has come to the forefront during the past decade as the "Captain of the Men of Death". Between 1914 and 1939 the death rate due to heart disease has more than doubled(1). The majority of the deaths from heart disease occur during the fourth or fifth decades of life, when the individual should be at his best in matured achievement. Although the general term, hypertensive cardiovascular disease, is applied to a majority of these deaths, syphilis ranks next to rheumatic heart disease as a cause of these fatalities with specific etiology. It has been estimated that in the United States between 30,000 and 40,000 deaths occur annually from cardiovascular syphilis. The relationship of syphilis to heart disease was described by Pare in 1575, Lancisi in 1724, Morgagni in 1761, Welch in 1876, Döhle in 1886, and finally demonstrated in the diseased aorta by Reuter and Schmorl in 1907.

The prevention of cardiovascular syphilis lies in the adequate treatment of early syphilis. Among 402 patients with early syphilis observed for nine years by Moore and his associates(2), not one of the 117 patients who received at least three courses of arsphenamine and mercury presented evidence of cardiovascular involvement, whereas 8.4 per cent of the remaining 285 patients developed one of the serious complications of cardiovascular syphilis. Although there has been a marked increase in the number of patients adequately treated for syphilis during the past three years, still probably less than 20 per cent of patients with syphi-

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1. Annual Report of the Bureau of Vital Statistics, North Carolina State Board of Health, 1937.
2. Moore, J. E. and Kemp, J. E.: The Treatment of Early Syphilis, II. Clinical Results in 402 Patients, Bull. Johns Hopkins Hosp. 39:16, 1926.

lis in North Carolina receive adequate treatment. This suggests, on the basis of a potential syphilis load of 10 per cent of the general population, that there may be at any one time approximately 20,000 patients in North Carolina with syphilitic heart disease.

It is also recognized that with the present casual diagnostic methods the diagnosis of cardiovascular syphilis is rarely made *ante mortem*. At Johns Hopkins Hospital during the period 1910-1930, of 105 patients with syphilitic aortitis proved at autopsy, in only 16 per cent was it diagnosed or suspected *ante mortem*(3). A survey of the actual clinic records of these patients revealed that a diagnosis might have been reached in approximately 33 per cent more of these cases, had recorded physical signs and symptoms not passed unheeded. The life expectancy of patients with cardiovascular syphilis ranges from one to ten years among patients with extensive involvement of the aorta to that of a normal lifetime for those with uncomplicated syphilitic aortitis who receive adequate treatment. The usual evolution of syphilitic aortitis is such that the less severe grades gradually progress to the more severe. It follows, therefore, that the earlier the disease is recognized and the patient is brought under treatment, the greater the life span of the individual. At the present time, of those cases recognized as cardiovascular syphilis the majority are not diagnosed until the second decade after the onset of the infection. If we hope to prevent irremediable damage, special efforts must be applied to make earlier diagnosis.

Vonderlehr and Usilton(4) estimated that approximately one-third of syphilitic patients at thirty-five years of age have syphilis which is non-detectable by the usual serological tests. This is due either to treatment or to spontaneous reversal of the serological reaction. On the basis of postmortem studies Reid has shown that 23.8 per cent of patients with cardiovascular syphilis have negative Wassermanns; therefore, cardiovascular syphilis should be kept in mind with every adult patient who has a history of syphilis regardless of his serological status.

Among 211 patients with syphilitic aortitis proved by autopsy at Roper Hospital (records collected over a period of nine and one-half years), Wilson(5) has shown that every case with symptoms referable to the heart had one of the complications of cardiovascular syphilis—i. e., involvement of the aortic valve, coronary ostia or aneurysms. Patients in this study who did not have one of these graver complications of syphilitic aortitis were asymptomatic; however, about one third of these patients with asymptomatic uncomplicated syphilitic aortitis had some perceptible degree of aortic dilatation.

Therefore the problem which confronts a clinician in the diagnosis of uncomplicated syphilitic aortitis is that of finding this early lesion in a vigorous young adult approximately thirty years of age, with a history of syphilis but with no complaints, who may have a negative serological test for syphilis.

Evolution of Cardiovascular Syphilis

In this paper the discussion of cardiovascular syphilis is confined to syphilis of the aorta. The primary lesion of syphilis involves the smallest lymph and blood vessels. It is characterized by a perivascular round cell infiltration with lymphocytic and plasma cell predominating, accompanied by an endovasculitis which eventually destroys the intima and leads to an obliteration of the lumen of these small vessels. The resulting ischemic areas become necrotic. The resolution of this necrotic focus is followed by scar tissue replacement. Since Nature has endowed the aorta abundantly with a rich supply of vasa vasorum, it becomes particularly susceptible during the invasion by the treponema pallidum. The weight of evidence suggests that in the aorta the original syphilis foci occur in the ramifications of the vasa vasorum within the media, with subsequent destruction of elastic fibers(6). Further extension of the lesion involves the aortic adventitial and intimal tissues. On healing of these foci the elastic tissue is replaced by a relatively functionless fibroblastic tissue. The cumulative effect of alternating hemodynamic forces during each cardiac cycle acting on this scar tissue in the injured aortic walls results in stretching. The proliferation of

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3. Moore, J. E., Danglade, J. H. and Reisinger, J. C.: Diagnosis of Syphilitic Aortitis Uncomplicated by Aortic Regurgitation or Aneurysm. Comparison of Clinical and Necropsy Observations in 105 Patients, Arch. Int. Med. 49:753, 1932.

4. Vonderlehr, R. A. and Usilton, Lida J.: The Chance of Acquiring Syphilis and the Frequency of its Disastrous Outcome, Ven. Dis. Inform. 19:396, 1938.

5. Wilson, R., Jr.: Studies in Syphilitic Cardiovascular Disease; Uncomplicated Syphilitic Aortitis; Asymptomatic Condition, Am. J. M. Sc. 194:178, 1937.

6. MacCallum, W. G.: A Textbook of Pathology, Philadelphia, W. B. Saunders Company, 1932.

the lesion in the supravalvular portion of the aorta results at first in a fusiform dilatation of the aorta. The progression of the lesion to this stage probably defines the upper limit of asymptomatic uncomplicated aortitis. Further extension of this lesion toward the heart results in involvement of the aortic ring, with sagging of the attachments of the aortic valve (causing valvular insufficiency), narrowing of the coronary ostia, or both. Syphilitic aortitis rarely yields symptoms until these graver complications result. Severe localized damage to the media may occur, producing the anlage of an aneurysm. If the aortic valves remain competent, this will develop into a saccular aneurysm. If the disease is not diagnosed until these graver manifestations of syphilitic aortitis present themselves, the optimum period for helping the patient is gone(7).

Diagnosis

The discussion will be limited to such clinical criteria as are pertinent to the diagnosis of asymptomatic uncomplicated syphilitic aortitis. A meticulous examination should reveal in at least one-third of the patients, unless there are other complicating illnesses (particularly those included under the general term of the hypertensive cardiorenal syndrome), one or more of the five clinical signs suggested below:

1. Soft systolic murmur in the second right costal interspace.
2. Tympanitic aortic second sound in the second right costal interspace.
3. Increased retromanubrial dullness.
4. Increased jugular pulsation.
5. Fluoroscopic evidence of a dilated and abnormally functioning aorta.

The soft systolic murmur of an early aortitis may be due to a roughened intima, a dilated aorta with changes in the sounding structure, or a combination of these. The ejection of the blood column during systole through the normally constricted aortic ring into an abnormally dilated aorta above creates a venturi effect. The reduced pressure at the periphery of the central jet of blood causes eddy currents to be set up which will be reflected to the aortic walls, resulting in a vibration heard as a systolic murmur. This is represented schematically in figure 1.

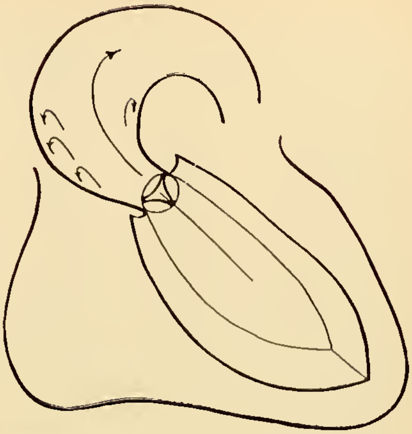

FIGURE 1. SCHEMATIC REPRESENTATION OF EDDY CURRENTS RESPONSIBLE FOR VIBRATION OF WALLS OF DILATED AORTA.

The accentuated and tympanitic second sound in the aortic area is the result of the increased hydrostatic pressure with a water hammer effect on the competent aortic valve. This is produced by the larger volume of blood in the dilated aorta, which on the diastolic rebound snaps these valves together without the elastic cushioning effect of the normal aorta(8) (fig. 2).

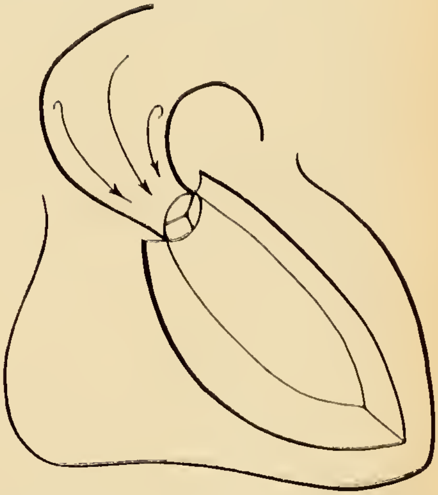

FIGURE 2. SCHEMATIC REPRESENTATION OF REFLEX SURGE FROM DILATED AORTA CAUSING TYMPANITIC A_2.

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7. Reid, W. D.: The Diagnosis of Cardiovascular Syphilis: Analysis of Clinical and Postmortem Findings, Am. Heart J. 6:81, 1888.

8. Turville, W. H. H.: Cardiovascular Syphilis, U. S. Nav. M. Bull. 37:237, 1939.

Increased retromanubrial dullness and increased jugular pulsation at this early stage of the disease have major significance(9). These findings, however, are not consistent, but probably suggest marked dilatation of the ascending aorta and the arch.

Much controversy exists as to the value of the teleroentgenogram and fluoroscopy in discovering early syphilitic aortitis(10). Kemp and Cochems(11) (12) (13), using Vaquez' and Bordet's(14) measurements, were able to show roentgenographic evidence of syphilitic aortitis in only 59 per cent of patients diagnosed clinically as such. Blitch, Morgan and Hillstrom(15), using the methods of Hampton, Jones(16) to measure aortic dilatation, were unable to find roentgenographic or fluoroscopic evidence of syphilitic aortitis among 30 patients with syphilis of twelve years' duration or more. Maynard(17) and his associates were able to identify syphilitic aortitis roentgenographically among 41.7 per cent of 346 cases of late syphilis. Padget and Moore(18) in a critical review of the literature on the roentgenographic diagnosis of uncomplicated syphilitic aortitis, stated that commonly used teleroentgenographic studies were valueless, that the left antero-oblique position might hold some promise, and that fluoroscopic examination in the hands of a competent observer may have some value.

Fray (19) (20) (21) (22) (23) considers the left antero-oblique position, with his transverse, vertical and height-width indices, a superior method of determining aortic dilatation. The transverse arch index failed only twice to indicate aortic dilatation among 75 patients. These two patients had emphysematous chests.

The advantage of the left antero-oblique position lies in the fact that the lateral borders of the projected supracardiac shadows are probably caused by the aorta. The heart in this position also presents the intraventricular septum perpendicular to the fluoroscopic screen. Thus, the right and left ventricles are equally presented in relation to each other. In the antero-posterior position the right lateral border is frequently the superior vena cava, while the left is the pulmonary artery. The right antero-oblique position has relatively less value. In this position, the shadow of the descending aorta is superimposed on that of the ascending limb.

The relative positions of the various structures in mediastinal shadow of the left antero-oblique position are schematically presented in figure 3. The cross section is represented as taken just above the base of the heart at about the level of the fourth thoracic vertebra. In order to measure these structures with the minimum amount of distortion a two-meter target distance should be used. This requires about sixteen times as much power as ordinary fluoroscopic examinations. If an orthodiagraphic tracing is made of the supracardiac shadow, Fray's indices can readily be determined. It should be borne in mind, however, that even at this distance there may be a distortion of 8 per cent to 12 per cent over the actual width of these structures.

Of the three indices proposed by Fray the transverse chest-aorta measurement gives the greatest accuracy in measuring aortic dilatation. At the level of the aortic window the distance between the chest wall and costovertebral angle is measured. This is 14.5 cm. on figure 3. At this same level the distance between the lateral borders of the two limbs of the aorta is determined. On figure

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9. White, P. D.: Heart Disease, New York, The Macmillan Company, 1937.
10. Palmer, J. H.: Roentgenology of Heart and Great Vessels, Canad. M. A. J. 40:343, 1939.
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20. Idem: II. Determination of Type of Cardiac Enlargement (Right or Left), Ibid. 27:363, 1932.
21. Idem. III, Correlative Measurements of the Aortic Arch and the Thorax, Ibid. 27:585, 1932.
22. Idem. IV, Comparison of the Transverse Diameter of the Heart and the Cardiothoracic Indices of the Chest Obtained from the Posterior-Anterior and Left Anterior-Oblique Chest Films, Ibid 27:729, 1932.
23. Fray, W. W. and Green, J. H.: Structural Changes of the Aorta Due to Arteriosclerosis as Observed Roentgenologically. New York State J. Med. 33:894, 1933.

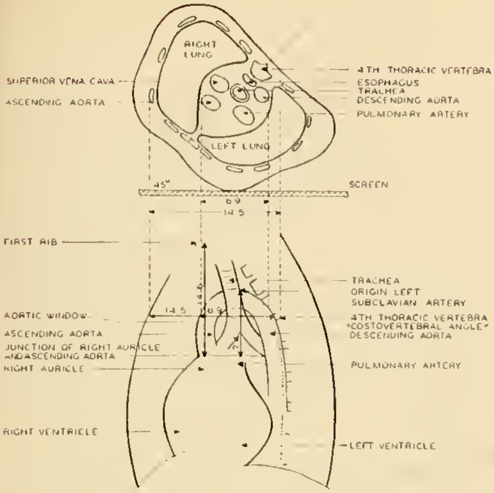

FIGURE 3. CROSS-SECTION AND LEFT ANTERIOR OBLIQUE SCHEMATIC REPRESENTATION OF THE CHEST OF A YOUNG ADULT MALE. CROSS-SECTION AT LEVEL OF ABOUT THE 4TH THORACIC VERTEBRA AND BISECTING THE AORTIC WINDOW

3 it measures 6.9 cm. The ratio 14.5/6.9 between these measurements equals 2.01. In normal persons this ratio can vary between 2.1 and 1.8(24). When any perceptible degree of aortic dilatation exists this ratio is less than 1.8.

The vertical ratio, measured from a base line at the junction of the right auricle and ascending aorta to the first rib and to the apex of the aorta at the junction of the left subclavian artery, is less accurate. In this figure this ratio 14.6/7.4 equals 1.9. The limits of 2.2 to 1.9 are considered normal, and factors less than 1.9 are abnormal. The height-width index of the aorta proper is determined by using the previously calculated aortic measurements. The ratio 7.4/6.9 equals 1.06 in figure 3. The normal limits of this index are 1.2 to .7. Factors below .7 are considered abnormal.

In routine visualization of the mediastinal structures for the purpose of studying the degree and type of pulsation and localized abnormal expansion, the magnification given the supracardiac shadows at ordinary fluoroscopic distances is not objectionable.

Treatment

The treatment of patients with detectable syphilitic aortitis must be conservative and prolonged. The aims of treatment are to arrest the process and produce symptomatic relief. It is of course impossible to replace destroyed elastic fibers, and improbable that a biological or serological cure will result from treatment, however vigorous or long. It is essential to avoid such a severe systemic reaction as a Jarisch-Herxheimer reaction at the coronary ostia or in the already weakened aortic wall.

If arsenicals are pushed too quickly, the resulting rapid healing will cause such proliferation of scar tissue as to increase the difficulties already experienced by the patient. This fibroblastic tissue reaction, producing a contractile scar in the structure at the base of the aorta, is responsible for the so-called "therapeutic paradox" of Wile.

It is impractical to prescribe a standardized treatment procedure for patients with syphilitic aortitis. These cases must be individualized. In general, however, they should be prepared with two to three months of bismuth before being started on an arsenical. The arsenicals of choice are: neoarsphenamine, beginning with doses of .05 or .1 gram; and mapharsen, .01 gram. These doses are gradually increased to the normal dose for the patient's weight. Continuous alternating courses of six to eight doses should be given for a period of at least two years. Patients with advanced cardiovascular involvement should receive relatively smaller doses of the arsenicals.

It is also to be borne in mind that approximately 25 per cent of patients with cardiovascular syphilis have neurosyphilitic involvement. These patients must be carefully appraised before being exposed to the risk of thermotherapy. Tryparsamide is the drug of choice to be used after failure of either neoarsphenamine or mapharsen to arrest the neurological lesion within six months.

Summary

The problem of the diagnosis of asymptomatic uncomplicated syphilitic aortitis is reviewed. The patient usually is a vigorous young adult, approximately thirty years of age, without symptoms and not infrequently with a negative serological test. The authors' impression of important diagnostic criteria is developed. It is believed that meticulous examination, taking into account systolic aortic murmur, tympanitic aortic second sound, increased retromanubrial dullness, in-

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24. Fossier, A. E.: Size of the Normal Aorta, Am. Clin. Med. 8:525, 1925.

creased jugular pulsation, and fluoroscopic evidence will reveal in a significant number of young syphilitic adults in the first decade of their infection an aortitis which may be due to syphilis. Treatment must be individualized, conservative and prolonged. It should aim at an ultimate arrest of the syphilitic process and a symptomatic cure, with a minimum of reactions.

TWIN PREGNANCY WITH RUPTURE OF THE UTERUS FOLLOWING SPONTANEOUS DELIVERY OF THE FIRST FETUS

With Report of A Case

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W. E. Miller, M.D., F.A.C.S.
Whiteville

The purpose of this paper is to present a brief review of spontaneous rupture of the uterus during labor; and to report a case unusual in that it occurred in twin pregnancy where one of the twins was born normally, while rupture occurred before delivery of the other.

Rupture of the uterus is not a new entity, but fortunately it is comparatively rare. In his forty years of obstetrical practice, De Lee is said to have seen only eighteen cases. Several hundred cases have been reported between the years 1895 and 1932. Of these cases 175 occurred following cesarean sections. Jewett reported a case where one of twins was born spontaneously, while rupture occurred before delivery of the other.

Etiology During Pregnancy

Spontaneous rupture does not occur during the early months of pregnancy. Traumatic rupture is due as a rule to attempts at abortion, usually criminal, and is almost always followed by peritonitis and pelvic cellulitis.

In rare cases, the uterine wall may be perforated in several places by the syncytial cells in hydatidiform mole.

Ruptures in the later months of pregnancy are most often spontaneous. They result, as a rule, from weakening of the uterine wall because of such anomalies as scars, uterus bicornis, thinning or fibrosis of the uterine wall.

Rupture During Labor

The cases in which rupture occurs during labor are by far the most common. They are often difficult to diagnose and always require immediate treatment. Cases in which rupture occurs as a result of trauma are far more numerous than those in which rupture is spontaneous. Trauma is frequently caused by rough and unskilled attempts at operative delivery, the clumsy application of forceps, or embryotomies where bony fragments penetrate the uterus.

Schumann lists the following causes of spontaneous rupture during labor:

1. Separation of scars of uterine wall from previous cesarean section, myomectomy, placenta accreta, etc.
2. Over-stretching of the lower segment in transverse presentation, neglected face with chin posterior, gross oversize of the fetus, pelvic tumors, or any obstruction to the vaginal outlet.
3. Congenital defects, such as uterus bicornis.

Frequency

It is a disease of multiparity, seldom occurring in a primipara. Schumann reports one case in 6,000 deliveries, this being a traumatic rupture. Out of a series of 95,000 cases reported in Philadelphia, the incidence of rupture was one in 3,600 cases. Fruend, in compiling the reports of seventeen authors, found one case in 2,114 deliveries.

We must realize, of course, that most statistics are supplied by large hospitals where the incidence is necessarily high, since many of these cases would never reach a hospital except for such a complication of labor as this.

Mode of Spontaneous Rupture

The classical work of Bandl in 1875 and that of Micaelis and Fruend form the basis of our present day knowledge concerning the mechanism of uterine rupture. During labor the uterus divides into an upper contractile segment made up of the fundus and a lower dilating segment composed of the fibers of the isthmus uteri and the cervix. At the junction of these two segments, there

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From the Department of Surgery, the Columbus County Hospital.

is a well developed ring of muscle designated as Bandl's or the contraction ring. The upper contractile portion attempts to push the fetus downward, and at the same time, to draw the lower dilating segment upward over the body of the fetus. The cervix is partially fixed by the sacro-uterine ligament behind, the bases of the broad ligament at the sides, and the connective tissue at the base of the bladder in front. At the same time, the round ligaments act as guy ropes to prevent the upper segment from pulling too far up over the fetus and away from the pelvis. If any obstacle offers itself to the advance of the presenting part, the upper segment tends to push upward above the child and, at the same time, to pull over it the dilated and stretched lower segment. Due to the position and irregular shape of the fetus, the lower segment is never dilated symmetrically; rupture occurs where one portion is stretched to a greater extent than the other.

This explains the instances in which there is some obstruction, such as contracted pelvis or tumor. Those cases where no obstruction is found are explained on the basis of a uterine wall weakened by such conditions as fibrosis, old scars, or syphilis.

Pathology

Spontaneous ruptures are usually divided into two classes: (1) complete—where the tear extends into the peritoneal cavity, and (2) incomplete—where the muscle is torn, but the peritoneum remains intact. Practically all spontaneous tears begin in the lower segment.

Symptoms

Most writers maintain that by careful observation of the patient, the majority of ruptures can be anticipated. Unfortunately, all physicians practicing obstetrics are not this observant; and many of the cases will tax diagnostic abilities to the fullest extent even after rupture.

Previous to rupture the patient usually has a very stormy labor. She is restless, tosses and rolls about the bed. The pulse rises and is usually pounding. The respiration is panting. De Lee says that if the patient has syncopal attacks, one can infer that slight tearing of the uterus has occurred.

At the time of rupture there is usually a severe lancinating pain, followed by cessation of labor pains, falling blood pressure, rapid febrile pulse, air hunger, and other signs of deepening shock. There is usually vomiting which tends to increase in severity. One outstanding symptom presented by the following case was sub-diaphragmatic pain referred to the shoulder region. On palpating the abdomen, the fetus seems to be lying directly beneath the skin. This was the first sign, other than apparent shock to attract attention in this case. Shifting dullness in the flanks, indicative of free fluid, is usually present as a result of hemorrhage. The diagnosis is sometimes confirmed by vaginal examination and by palpating the tear from within the uterine cavity.

Case Report

Mrs. D. R., aged thirty-eight, gravida 3, was first seen by one of us (R.T.S.) at her home on January 12, 1940. Labor began at 6 a.m., preceded by rupture of the membranes. A midwife was called, and according to her statement progress of labor was smooth and uneventful, with no unusually hard pains. The first baby was delivered spontaneously at 10 a.m. after a labor of only four hours. A few minutes after birth of the first child labor pains began again, but soon ceased. Both midwife and patient stated that the pains were very weak in character. A vaginal examination by the midwife revealed the head of a second fetus in the vaginal canal. She advised the husband to call a physician. The patient's house was reached about 2 p.m., approximately four hours after the birth of the first child. Most unsanitary conditions prevailed. The patient was in a moderate degree of shock, and the bedclothes testified to excessive hemorrhage. She was having no labor pains, but complained of pain beneath the right diaphragm radiating to the shoulder. The abdomen was distended and the fetal parts seemed to be palpable directly beneath the abdominal wall. Blood pressure was 90/50. The presenting head was in mid-pelvis. Injection of 2 minims of obstetrical pituitrin was given as a diagnostic measure to determine whether or not pains could be initiated, but none resulted. Forceps were not used, because the slightest pressure on the presenting head would push it through the superior strait of the pelvis. In order to deliver the second fetus quickly, an internal podalic version was done and the dead fetus delivered. Because of the continued hemorrhage the remaining pituitrin in the 1 cc. ampule was given without waiting to attempt delivery of the placenta. The uterine musculature responded well to the pituitrin, and most of the hemorrhage was controlled. By this time shock had deepened to an alarming degree, and the patient was semi-comatose. Circulatory stimulants and morphine were administered, and the patient was transported to the Columbus County Hospital, a distance of eleven miles.

The past history was essentially negative. All previous pregnancies and labors were normal.

Physical examination at the time of admission to the hospital revealed a well developed and fairly well nourished white woman, in a condition of severe shock. The skin was pale, cold, and clammy to the touch. The pupils were round and equal and reacted to light and accommodation. The conjunctivae and mucous membranes of the mouth were pale. There was marked enlargement of the thyroid, which was firm and homogeneous in consistency with small nodules. Respiration was shallow and accelerated. Blood pressure could not be determined. Heart sounds were very faint and weak. The abdomen was greatly distended and extremely tender. The fundus of the uterus was palpable just below the umbilicus, and was firm in character. Shifting dullness was present in the flanks, with fluid waves palpable. There was a bloody discharge from the vagina, with edema and hyperemia of the vulva and vagina incident to labor and delivery. The severed umbilical cord was present in the vagina.

Immediately after admission to the hospital, the patient was given 500 cc. of 10 per cent glucose intravenously. Four hours later another venoclysis of 500 cc. of 10 per cent glucose was given. Red cell count was 3,500,000; hemoglobin, 54 per cent; white cell count, 7,500; polymorphonuclears, 90 per cent. An immediate laparotomy was thought advisable, but because the patient was such a poor surgical risk and no blood donors were immediately available, it was deemed best to delay operation until these could be secured.

The next morning, January 13, a laparotomy was done under general anesthesia. When the peritoneal cavity was opened, a foul odor was encountered, and some 400 cc. of free blood was found in the cavity. A large, irregular, transverse rupture in the lower left segment of the uterus was found. The rupture extended out into the left broad ligament; the urinary bladder had been torn loose from the anterior wall. Lying in the left lower quadrant were two well developed placentae, their membranes, and about fifteen inches of their cords. The distal ends of the cords were tied with umbilical tape. The operative procedure consisted in removing the placentae and as much blood as possible from the abdominal and pelvic cavities. A supra-vaginal hysterectomy was done; three cigarette drains were placed in the lower angle of the wound; and the abdomen was closed.

A transfusion of 600 cc. of citrated blood was given immediately following operation. The immediate postoperative condition was fair. A Levine tube was inserted and pitressin given at regular intervals to relieve intestinal distention. 500 cc. of 10 per cent glucose was given at 4 p.m. Sulfanilamide was given through the Levine tube. Another transfusion of 500 cc. of citrated blood was given at 10:30 p.m.

The next day, January 14, another transfusion of 600 cc. of citrated blood was given.

The clinical course proceeded satisfactorily with the patient receiving blood transfusions at two day intervals, supplemented by intravenous fluids between times. On the sixth postoperative day the temperature went to 101.4 degrees. It then assumed a septic course, with a daily variation of one to two degrees. It was thought that the patient was developing an intraperitoneal abscess, possibly subdiaphragmatic. There was definite tenderness beneath the right costal margin, and an ill defined mass was palpable in this region. X-ray examination on January 22 revealed some elevation of the right diaphragm. Sulfanilamide was discontinued and sulfapyridine begun. Diathermy was given over the abdomen twice a day. By January 24, the patient began to show signs of cardiac decompensation, and digitalis was started. The use of intravenous fluids and whole blood was continued until January 30. The temperature returned to normal by lysis, and general improvement followed. The patient was discharged from the hospital on February 14, 1940.

On March 18 the patient was seen for a follow-up examination. The operative wound had healed. Bimanual examination revealed the stump of the cervix high in the vaginal vault and the pelvic adnexa were found to be normal. The patient had returned to her vigorous household duties. She complained of irregular attacks of weakness, which were thought to be the result of hyperthyroidism. A basal metabolism test was made on March 25, and was found to be plus 40.

Conclusion

1. The incidence of one case does not allow the formation of any authoritative conclusions; but it does serve to emphasize the fact that spontaneous rupture of the uterus is a potential danger in any obstetrical practice irrespective of size or locality.
2. Spontaneous rupture may occur during the course of an unusually easy labor, and may go unrecognized.
3. This entity should be kept in mind by all who practice obstetrics, and if it is suspected, immediate and appropriate treatment should be instituted.

A REVIEW OF THE DATA ON SIX HUNDRED WOMEN TESTED FOR PATENCY OF THE FALLOPIAN TUBES

Robert Thrift Ferguson, M.D., F.A.C.S.

Charlotte

Barrenness was spoken of sixteen times in the greatest of all books, the Bible. So far as I know, nothing practical was done for its relief until about twenty years ago, when Rubin insufflated the tubes and showed us how to get at the etiology of sterility. After seeing Rubin work, some eighteen years ago, I devised a very simple apparatus for testing the patency of the fallopian tubes, which I have used ever since, and which, on account of its simplicity and low cost, is used all over the United States and in many foreign countries. Some equipment for testing the patency of the fallopian tubes is a necessary part of the armanentarium of every gynecologist and obstetrician. In many patients who complain of pelvic symptoms the diagnosis will be made when the tubes are tested and found non-patent.

In reviewing a large series of patients treated for sterility I shall take into consideration some forty conditions that have come under my observation, going into detail regarding the more important ones and merely mentioning others.

The average age of the patients represented in this group is twenty-eight. The average age for the menarche is thirteen, while the average number of years these patients were married is seven.

Leukorrhea from various causes is the deterring agent to conception in many instances; and chronic cervical infection, with thick ropy mucus plugging the internal os, and tightly adherent to its margin, is frequently the causative agent in sterility. Many of these patients will conceive following cauterization of the cervix and the clearing up of this tenacious mucus. Forty-two per cent of the patients in this series suffered from various types of leukorrhea and required some form of treatment. Cervicitis and endocervicitis go hand in hand with leukorrhea, and in this series 32 per cent were so afflicted.

Eight per cent of the patients in my series had stem pessaries inserted before I saw them. Too many intra-uterine pessaries are inserted where the indications are not clear. I have the records of many patients who have had stem pessaries inserted and who have been sterile since. Pessaries for supporting malpositions of the uterus are wonderful aids to the gynecologist, but I mention stem pessaries only to condemn them. The only condition that I believe really justifies the use of a stem pessary is the anteflexed type of uterus, and unfortunately this is not always relieved.

Forty per cent of the patients in this group had had previous operations either for sterility or for other pelvic complaints. I find that a great many patients who have been operated upon are sterile afterwards. Removal of one tube or ovary is frequently followed by sterility, particularly where the operation has been for acute or chronic salpingitis.

Dilatation and curettage are often followed by sterility. The reason for this is not satisfactorily explained, unless in scraping the uterine cavity in the region of the tubal ostium an over-zealous operator might cause scar tissue to be formed which blocks the uterine ostium. Suspensions are frequently followed by sterility, and on re-operation

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many adhesions are found to exist in both sides of the pelvis.

Former pregnancies, miscarriages, and abortions account for a great many secondary sterilities, due to such sequelae as infections, lacerations, retroversions, and curettements. In many cases the only history obtainable that could possibly have any bearing on the sterility is the fact that the patient had an abortion, voluntarily or illegally performed. We are all aware that physicians who produce abortions illegally usually do them in their offices under most unfavorable conditions, and that many infections follow. I have the histories of many women who have had involuntary abortions and who have been unable to conceive since. I am unable to account for this.

Malpositions of the uterus account for a large number of sterilities. Where adhesions are present it is necessary to perform some type of operation, and many will conceive following the proper adjustment in the pelvis. Others who have uncomplicated retroversions are relieved by replacing the uterus in its proper position and inserting a suitable pessary. Retroversions do not seem to play such an important part in sterility with the multiparous woman, but a large percentage of nulliparas with complete retroversion will not conceive until the uterus is replaced. Forty-two per cent of this series had the tubes obstructed by retroversion or other malposition. Women with severe anteflexions are frequently sterile, and nearly always suffer from intractable dysmenorrhea.

Former ectopic pregnancies occurred in only one per cent of this series. The condition that caused the ectopic originally is no doubt the cause of further sterility.

A fleeting enlargement of the thyroid in girls around the time of puberty and shortly thereafter is a rather common occurrence, but under the influence of iodine most of these enlargements will disappear. I have seen enlarged thyroid in 7 per cent of this series. Hypothyroidism is a very common factor in sterility, and many patients of this type will conceive following the administration of thyroid when indicated—particularly those who are suffering from obesity, amenorrhea and oligomenorrhea.

Cultures and smears are made on all patients who have a vaginal discharge, and in only 6 per cent has gonorrhea been proven at the time. This does not mean that a large percentage of sterile women have not been victims of the Neisserian infection. In my experience it is impossible to find the gonococcus present in any patient who has had the infection for as long as a year, unless this patient has had a re-infection very recently; however, the symptoms and pathological findings in many cases indicate very definitely that they have formerly had such infection. The Wassermann test is done in my office only on those patients who demonstrate symptoms that might lead one to suspect spirochetal infection.

Some authors have reported as high as 25 per cent of sterilities due to the male. If their figures were based on the absence of pelvic pathology, I should agree with them; but in actual fact only 2 per cent of the husbands examined in this report were sterile. I would like to make this notation, however—that I only examine the semen in those cases where the woman is found to be normal, with patent tubes, and still is unable to conceive. If the tubes are non-patent there is no reason to examine the male.

Painful coitus usually indicates pelvic pathology. Sixteen per cent of the women in this series complained of this symptom. In many patients it is due to salpingitis or retroversion, and in such cases it is relieved by operative procedures.

Headache is a frequent accompaniment of pelvic pathology, and was present in 61 per cent of this series.

Backache is a common complaint in the female following the menarche, and the pain is often due to some other origin than pelvic pathology. Sixty-eight per cent of this group complained of backache.

Dysmenorrhea has always been the *bete noire* of the gynecologist. Many patients with normal pelves suffer intensely when they menstruate, and some are not relieved by any treatment. Too many patients suffering from dysmenorrhea have had the appendix removed without benefit. A patient should be studied a long time before a chronic appendix is removed for dysmenorrhea. Forty-one per cent of these patients had had appendectomies.

The passage of clots at the periods is such a common occurrence that unless they are very large or cause definite pain they are considered a normal part of the average menstrual period. Forty-nine per cent of this series stated that they passed clots.

It is rare that a person within this age limit has heart trouble, and my records show its occurrence in only 3 per cent. Tuberculosis has been found by x-ray in only 2 per cent of these patients.

Fistula and fissure in ano are mentioned only to show that they occur in about the same proportion that they occur in any other class of patient—1 per cent of the former and 4½ per cent of the latter.

Fibroid tumors are very common, but in my experience more of them occur in an age limit above the average of this report. I have found fibroids in only 6 per cent of these patients.

Abscess in Bartholin's gland is quite common, and in a venereal clinic would show a very high percentage. However, in this study it occurred in only 3 per cent.

Cystic ovaries were present in 19 per cent of the patients in this series.

I have the blood counts and hemoglobin estimation done in every case that comes under my care. Nineteen per cent of this series showed a white cell count above ten thousand, and 23 per cent had a red cell count below four million. The blood pressure in this series averaged 110/72. Albuminuria occurred in only 3 per cent, and glycosuria in 1 per cent.

Now for the real purpose of this review, let us look at the findings following the tubal patency test. Fifty-six per cent of this series were found to have obstructed tubes, leaving only 44 per cent we could hope to benefit from the test itself. One fourth of these conceived following the test when nothing else was done. This number is not accurate, because I rarely hear from more than 60 per cent of the patients to whom I send questionnaires. In my fifth series, reported a little more than a year ago, 75 per cent of those with patent tubes conceived following the test.

I operated on 20 per cent of those who were demonstrated to have closed tubes. In every case the diagnosis was confirmed at operation, so that the value of the test from a diagnostic point of view is practically unassailable.

I have spent a great deal of time and energy on this subject for the past eighteen years, and from the large number of requests for reprints and for the apparatus itself which have come from all over this country and from many foreign countries, I feel more than repaid for what I have been able to accomplish.

STATISTICAL DATA ON 600 WOMEN TESTED FOR PATENCY OF THE FALLOPIAN TUBES
(Series 1927, 28, 29, 32, 34, 39)

	Years
Average age	28
Average menstrual age	13
Average number years married	7
History:	**Percentage**
Previous operations:	
Appendectomies	41
Tonsillectomies	50
For sterility or other pelvic complaints	40
Dilatation and curettage	27
Pessaries inserted	8
Clots passed	49
Abscess in Bartholin's gland	3
One or more pregnancies	33
Miscarriages	20
Ectopic pregnancy	1
Constipation	51
Complaints:	
Headache	61
Backache	68
Leukorrhea	42
Painful coitus	16
Dysmenorrhea	60
Findings:	
Cystic ovaries	19
Polyps	3
Fibroids	6
Malposition of uterus	42
Cervicitis—endocervicitis	32
Gonorrhea (proved)	3
Syphilis	7
Fistula in ano	1
Fissure in ano	4½
Enlarged thyroid	7
Heart lesions	3
Tuberculosis	2
Albumin in urine	3
Sugar in urine	1
White count above 10,000	19
Red count below 4 million	23
Sterile husbands	2
Average blood pressure, 110/72	
Results of patency tests:	
Patent tubes	44
Non-patent tubes	56
Operated on by me	20
Pregnancy following test	11

Biography.—Through biography the student is given an ideal, and this gives him an urge to so accomplish his tasks that he may live his life as a Marion Sims, a Theobald Smith, an Osler or a Thayer or at least yearn for those things which are accomplished by living thoughtfully in simple honesty.—Macnider, Wm. deB.: The Biologically Minded Physician, Science, 86:109-114 (Aug. 6) 1937.

MARRIAGE COUNSELING FOR PHYSICIANS

Frank Howard Richardson, M.D., F.A.C.P.

Black Mountain

Some may wonder what a pediatrician, who is supposed to limit his practice to children, has to do with counseling adults about their marriage problems. The answer of course is that the essence of pediatrics is prevention, rather than cure after disaster has struck; and if there is any disaster that can strike a child, and cripple him emotionally, it is disharmony between the two most important beings in his limited world—namely, his father and his mother.

More and more frequently we pediatricians are tracing disturbances in the physical as well as the mental and emotional health of our children back to unhappiness, and often to unhappiness between their parents. It is a truism to say to a group of physicians that the child from the unhappy home is very apt to develop the most bizarre, as well as the most common, kinds of behavior problems. So it is the job of the pediatrician perhaps more than of any other medical man except the general practitioner—that almost extinct example of the genus medicus — to know something about the homes from which his patients come, and if necessary to be prepared to do something remedial about them.

The first thing that pops into the head of the average present-day American, especially if he belongs to the group representing the third and fourth decades of life, when he gets into an emotional jam with his wife, is to start getting a divorce. A good doctor always considers operation as a last resort; but the operation of divorce, always a serious surgical measure, and usually a tragic amputation, is becoming increasingly the first thought of the parents of our boys and girls.

I do not propose to discuss whether the home broken by divorce is better or worse than the home that is cracking and crumbling from nagging, jealousy and misunderstanding. The boarding schools and camps in which this mountain region of ours abounds are full of children from both sorts of background. What I do want to call to your attention is the fact that there seems to be no one whose business it is to help parents whose marriages are going wrong, whether before or after they reach the stage of failure that divorce confesses itself to be. I submit that it is the doctor, the family's closest friend and adviser, whose business it is to render the service that is so sorely needed.

You may remember that Mark Twain once said that everyone talks about the weather, but no one does anything about it. Why doesn't someone do something about marriage, instead of just talking about it? Frankly, I suppose that it is because marriage involves sex. And wherever and whenever sex raises its ugly head, the American promptly hangs his own in embarrassment.

In this respect, the Anglo-Saxon differs from his Latin and Oriental brothers in an interesting way. He is not at all nonplussed by the narration of smutty stories or by the recital of amorous adventures. His newsstands groan under their load of pornographic magazines, once banned, but now admitted into his living room. But when it comes to a serious discussion of this, one of man's two most engrossing preoccupations, he is struck dumb with modest confusion. And as for studying the art of love, or the problem of how to be happy though married, that is something completely outside his ken. He dismisses any efforts in this direction as lewd and licentious; and regards serious students of marriage, like the late Havelock Ellis, Dr. Robert L. Dickinson of Brooklyn, or Dr. Ernest R. Groves of Chapel Hill, as eccentrics.

The Frenchman and the Oriental may not be more moral than we are; but they have been far wiser. They have considered sex as something well worth studying and understanding, as far as it can be understood. No stigma is attached to the man who makes it a subject of serious consideration.

As a matter of fact, the doctor is about the only person who can afford to touch the delicate subject of marriage and its problems, in this peculiar civilization of ours, without running the risk of losing his reputation. The clergyman who attempts marriage counseling has to stand for disagreeable accusations; the so-called "consulting psychologist" is looked at askance; and amateur counselors are commonly regarded as

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just plain busy-bodies—frequently, perhaps, with good reason.

People turn naturally to the family doctor when they are in trouble; or if they haven't one, to the most human-seeming and approachable specialist with whom they have any close contact. And those who are unhappily married certainly are in trouble, and their children, too, are deeply involved. But such is our national reticence in such matters, that if the doctor shows the faintest suggestion of embarrassment, they close up like a bivalve, and go out from his office to consult the Christian Science reader or the next-door neighbor. And medicine has lost to the cultist another opportunity for service.

What is needed by the doctor who wants to do this work acceptably? A familiarity with half a dozen text books*; a moderate acquaintance with present-day conceptions of psychology, such as an up-to-date physician can safely be assumed to possess; and the experience any doctor picks up as he passes through this world. Given these, any medical man should be able to give adequate aid to his patients who need it so desperately.

Perhaps the commonest marriage difficulty people meet with is based on our infantile idea that marital attractiveness is present in early maturity, and fades with middle-age. A corollary or resultant belief is that divorce, followed by a marriage with a young wife to replace the older one, must necessarily be a pleasurable experience. Of course anyone who is emotionally adult realizes at once that the reverse is the case; that what is normal for the high school or college freshman who flits from date to date is a sign of emotional retardation in the married person, and that true marital satisfaction should increase, rather than fade, with the years. Hence the divorcee is an emotional failure, to be pitied as we pity the tramp who is a financial failure, the invalid who is a physical failure, or the thief who is a moral failure. The doctor who has the respect of his patient can educate him to a more mature emotional level than anyone else can.

Without attempting a statistical analysis of the causes of marital unhappiness, I can say that two things stand out clearly. The first is that an astonishing amount of marital disharmony comes from seemingly trivial causes, such as differences in age, financial or social status, nationality, or religion.

The second is that in a great majority of the cases that come to open rupture, and probably in quite as high a proportion of those that stop short of the courts, physical or sexual disharmony or lack of adjustment is at the bottom of the trouble, whether it is diagnosed or not. Stating it the other way round, it is amazing how successfully the most unpromising-looking marriages can work out, providing successful sex adjustment is attained.

Here the doctor should certainly be at home. Yet while we doctors can warn a young man against the dangers of venereal disease, prostitution or masturbation, most of us are tongue-tied when a prospective husband comes to us for sensible first-hand information as to how to conduct his wedding night. I can not conceive of more dangerous counsel than to tell such a seeker after knowledge that whatever else happens, he *must* not fail to consummate his marriage the first night; yet that questionable nugget was the sum total of the treasure trove carried away by a young friend of mine from the office of an excellent obstetrician to whom he had appealed for advice

Another of the most valuable and most badly needed aids the doctor can give is the correction of the common nexus of ideas regarding the roles of the partners in coitus: (1) That the man has certain "conjugal rights" at all times, without regard to any mutuality of emotion in his partner; (2) that desire in the wife is a matter of no consequence; (3) that the virtuous wife should regard this whole business as more of an annoyance than anything else.

I am amazed to find how commonly held are these ideas on the husband's part, and how generally they are conceded by the wife as being perfectly correct. No one but the doctor can convince two such married partners of the dangers they are running, not to speak of the valuable experiences they are missing, by such dense ignorance of the vital role played by periodicity of desire in the female. A marriage based on these ideas is almost foredoomed to failure; yet a little medical help could easily salvage it.

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*The following books may be helpful:

Elliott and Bone: The Sex Life of Youth, New York, Associated Press, $1.50.

Groves, Ernest R.: Preparation for Marriage, New York, Emerson Book Co., $1.50.

Groves, Ernest R.: Marriage, New York, Henry Holt, $4.00.

Groves, Ernest R.: Sex in Marriage, New York, Macaulay Co., $1.00.

Gray, A. Herbert: Men, Women, and God, New York, Associated Press, $.85.

de Schweinitz, Karl: Growing Up, New York, The Macmillan Co., $1.00.

A misunderstanding of each other's point of view is frequently at fault. I remember an instance where an elderly couple disregarded my usual practice of seeing the man and wife apart from each other, and the wife stated baldly that the cause of their visit was the infidelity of her husband, and the fact that he had infected her with a venereal disease.

I turned in some surprise to the accused, expecting vehement and outraged denial. Instead I was dumbfounded to hear the smug confession, "Yes, doctor, I've been unfaithful!" As soon as I could get them apart, I found that though they had lived together for years, and were genuinely in love with each other, there had never been a real understanding between them as to what the husband considered the satisfying of his physical needs. Proper instruction would have made this straying from the family fold quite unnecessary. My task was far more difficult at this stage than would have been that of the doctor who might have given them the information thirty years ago which would have saved them both a dangerous infection, and an emotional tangle that threatened the happiness of a whole family as well as the actual sanity of a high-minded woman.

Another case was that of a comparatively young man who had married a comely divorcee some eight or ten years his senior, the mother of three adolescent boys. Their point of disagreement was the lack of respect shown him in small household matters by one of these children. Whenever the boy became too unbearable, the husband would resort to over-indulgence in cocktails; then the fireworks would start.

All that was necessary was to suggest that both husband and wife avoid the alcoholic explosive that served to detonate the emotional charge. What makes the experience worth relating, however, was a remark the wife made about the break with her first husband. When I asked if she didn't consider that there had really been no adequate cause for this divorce, she replied quite frankly, "Yes, I realize now how utterly unnecessary it was. I know that it could have been saved by just such steps as we are taking now with you. I don't want my present marriage wrecked, as my first one was, by the want of a little plain common sense."

As to the technique of eliciting confidences, I should strongly suggest the reversal of the usual office or consulting room arrangement, so that the patient is allowed to sit where the light does not fall upon his face. Another way in which the procedure in this sort of counseling may wisely differ from the ordinary, consists in asking questions, not to get information on which to base advice, but rather to help the patient unburden himself of his difficulties.

If the doctor will give what factual information is lacking and is plainly needed by the patient, and then will let him talk out his difficulties, it is usually unnecessary to hand out very much advice. The necessary, or at least the most desirable, course will almost always present itself to the patient; and it will do so far more cogently and convincingly than the doctor could possibly lay it down. A solution thus arrived at needs little urging in order to be followed.

No, marriage will not always work of itself, in spite of our blind optimism about this very difficult and complicated business. Many people will not make it a success, without outside aid of some sort. If this is to be rendered available on anything approaching a general scale, it must be at the hands of the medical profession. We have allowed too many of our functions to be assumed by unprepared or ill-prepared substitutes, who give inadequate or actually harmful ministrations where we could give adequate service. Shall we fail our patients who look to us for this help?

Agents of Destruction.—These agents of destruction are many. They are all about man. He is always on the defensive. His life depends upon the state of his preparedness for constant chemical warfare against both plant and animal invaders. He is attacked by worms; roundworms, hookworms, pinworms, other kinds of worms; protozoa, bacteria and viruses. They would convert him into a regular British Museum of infirmities, as Mark Twain once said. They invade his intestines, his muscles and his vital organs, producing diseases which reduce his efficiency and often deprive him of life. These disease-producing organisms are the "reds" of cellular organization and like the reds in human society interpret the privilege of participating in the benefits of organization as a right to destroy what exists. The human system must fight incessantly to maintain its integrity and life.—M. L. Crossley: Recent Advances in Chemotherapy, Science, 91:369 (April 19) 1940.

SCIATIC PAIN AND HYPERGLYCEMIC RESPONSE TO GLUCOSE TOLERANCE TEST

C. T. Smith, M. D.

Rocky Mount

In his study of 226 cases of diabetes mellitus having neurologic disturbances not obviously due to a condition other than diabetes, Jordan(1) divided them into four groups: (1) hyperglycemic type, 34 cases; (2) circulatory type, 27 cases; (3) degenerative type, 45 cases; (4) neuritic type, 120 cases.

The hyperglycemic group comprised cases with tenderness along the course of the nerve and muscle affected and with an abnormally high blood sugar, in which the symptoms were relieved by adequate diabetic treatment. In 26 of the 34 cases of this group, pain involved the legs only.

It is generally accepted that sciatic pain does occur with diabetes mellitus in a certain number of cases. It is significant that the occurrence does not depend on the degree of hyperglycemia. The intimation that hyperglycemia is an etiological factor in the leg pain suggests further that patients with sciatic pain, in the absence of other obvious causes, may show a hyperglycemic response to glucose tolerance tests. The 13 cases presented below belong in this category. The patients presented themselves for the relief of pain along the course of the sciatic nerve. There was no obvious cause for the neuritis, and nothing in their histories to suggest diabetes. After the presence of hyperglycemia was established, they were put on a diet containing carbohydrate 120 grams, fat 80 grams, and protein 80 grams, some form of vitamin B_1, and 10 units of insulin each day (except for 3 cases in which diet and vitamin B_1 alone were employed). When possible, the patients returned later for postprandial blood sugar estimations.

The one-hour, two-dose tolerance test was used; for it demonstrates the paradoxical law of dextrose as enunciated by Allen(2). The interpretation of Gould(3)* et al, was selected over that of Exton and Rose(4), as one of the criteria of the latter is the appearance of sugar in the urine. This does not seem necessary to establish the existence of alimentary hyperglycemia.

Presentation of Cases

Case 1: A.C.J., aged fifty-four, a soft drink bottler, was admitted to the hospital on August 5, 1936, with complaint of pain down the back of the right leg extending to the foot. This had occurred twice each year for seventeen years, lasting from thirty to sixty days each time. The usual orthopedic procedure had not given relief. Examination disclosed tenderness along the course of the right sciatic nerve. There was slight wasting on the right with Lasegue's sign and normal Achilles reflex. Tolerance test: 100, 213, 250. Treatment: Diet, insulin, and B_1 therapy. After five days he was relieved of pain. Blood sugar one hour after midday meal was 113 mgs. He was discharged on August 15. Blood sugar on November 15, one hour after morning meal, was 111 mgs. Blood sugar on March 13, 1937, one hour after midday meal was 76 mgs. He continued diet and insulin three months; diet alone six months; thereafter excluded sweets only.

Case 2: A. E. S. aged fifty-nine, a housewife, entered the hospital on August 17, 1937, for relief of pain of nine days' duration in both hips and down the back of both legs. She was completely bed-riddden. Examination showed marked tenderness down the course of both sciatic nerves, with Lasegue's sign on both sides and Achilles reflexes diminished. Tolerance test: 109, 208, 250. Treatment: Diet, insulin, and B_1 therapy. The patient was discharged on August 29, 1937, relieved.

Case 3: L. J. W., aged fifty-three, a merchant, was seen on November 8, 1937, because of pain along the course of the left sciatic nerve. There was wasting. Lasegue's sign was present. Tolerance test: 98, 204, 227. Treatment: Diet, insulin, and B_1 therapy. The patient was relieved and discontinued his insulin entirely, and followed his

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1. Jordan, W. R.: Neuritic Manifestations in Diabetes Mellitus, Arch. Int. Med. 57:307, 1936.
2. Allen, F. M.: Glycosuria and Diabetes, Boston, W. M. Leonard, 1913, p. 1179.
3. Gould, S. E., Altshuler, S. S., and Mullen, H. S.: One-Hour Two-Dose Glucose Tolerance Test in the Diagnosis of Diabetes Mellitus, Am. J. M. Sc. 193:611, 1937.
4. Exton, W. G., and Rose, A. R.: A One-Hour Two-Dose Glucose Tolerance Test Based un Allen's Paradoxical Law, Am. J. Clin. Path. 4:381, 1934.

*At least two of the three following conditions must exist before a diagnosis of diabetes mellitus is justified:

1. A fasting blood sugar which exceeds 120 mgs.
2. A half-hour blood sugar which exceeds fasting level by 50 or more mgs.
3. A one hour blood sugar which exceeds the half-hour level by 30 or more mgs.

diet indifferently. He entered hospital again on April 2, 1939, with the same symptoms. He gave the history of eating candy and drinking several soft drinks daily. On examination there was, in addition to the sciatic tenderness, paresthesia of the left leg and anesthesia to light touch on the outer side of the left foot. Achilles reflex was absent on the left, and Lasegue's sign was present. Fasting blood sugar 105 mgs., and two hours after midday meal 180 mgs. He was treated as before. His blood sugar on April 11 was 165 mgs. two hours after midday meal. The insulin was increased to 15 units each morning. On April 17 he was relieved; his blood sugar two hours after midday meal was 120 mgs.

Case 4: S. B. J., aged forty-six, a merchant, entered the hospital on February 14, 1938, for relief of pain of three weeks' duration down the back of the left leg. He had been forced to stop work and was requiring opiates for relief. On examination there was tenderness along the course of the left sciatic nerve and Lasegue's sign was present. Tolerance test: 90, 166, 208. Treatment: Diet, insulin, and B_1 therapy. The patient was improved but not entirely relieved.

Case 5: L. P. J., aged twenty-four, a stenographer, entered the hospital on January 6, 1939, for relief of pain in the left back extending downward along the back of the left leg. This had been present a month; for the last two weeks she had been in bed under orthopedic treatment. On examination there was slight tenderness over the course of the sciatic nerve, with Lasegue's sign present. Tolerance Test: 108, 196, 222. Treatment: Diet and B_1 therapy, no insulin. The patient was relieved. Blood sugar two hours after midday meal on April 22 was 105 mgs.

Case 6: S. H. B., aged thirty-five, a housewife, entered the hospital on January 23, 1939, with history of pain of three years' duration in the left hip and down the back of the left leg. It interfered with walking and sleeping. Examination showed tenderness along the course of the sciatic nerve and Lasegue's sign. Tolerance test: 98, 165, 260. Treatment: Diet and B_1 therapy; no insulin. Symptoms were relieved.

Case 7: M. W., aged fifty-six, houseworker, entered the hospital on May 18, 1938, for relief of pain of three weeks' duration down the back of the left leg. On examination there was tenderness along the course of the left sciatic nerve with Lasegue's sign but normal Achilles reflex. Tolerance test: 78, 153, 217. Treatment: Diet, and B_1 therapy; no insulin. The patient was relieved.

Case 8: R. F., aged thirty-eight, a laborer, was admitted to hospital on May 27, 1938. Seven days before admission he worked in the rain, and the following day had severe pain down the back of the right leg, with numbness and tingling in the leg and foot. He had been bed-ridden six days. Examination showed tenderness along the course of the right sciatic nerve with parasthesia but no wasting. The reflexes were normal and Lasegue's sign was present on the right. Tolerance test: 83, 166, 204. Treatment: Diet, insulin, and B_1 therapy. He was discharged on June 13, relieved.

Case 9: R. R., aged forty-eight, a mechanic, was seen on November 30, 1937. He had had pain for two weeks down the back of the left leg extending to the foot. He had been told seven years previously that he had diabetes, but occasional examinations of urine since had failed to show sugar. On examination there was tenderness along the course of the sciatic nerve and Lasegue's sign. Tolerance test: 115, 200, 250. Treatment: Diet, insulin, and B_1 therapy. He was relieved.

Case 10: L. C., aged fifty-one, a farm laborer, entered the hospital on February 11, 1938, with history of pain in the right buttock extending down the back of the leg which had been present a year. Examination disclosed tenderness along the course of the sciatic nerve and Lasegue's sign. Tolerance test: 95, 166, 212. Treatment: Diet, insulin, and B_1 therapy. On February 17 the patient was relieved. His blood sugar one hour after breakfast was 90 mgs.

Case 11: J. W. F., aged forty-six, a housewife, entered the hospital on September 5, 1938, with pain in the back radiating down the posterior aspect of the right leg. The pain was particularly noticeable while sitting, and had been present for three years. Examination showed tenderness along the course of the sciatic nerve and Lasegue's sign. Tolerance test: 122, 172, 238. Treatment: Diet, insulin, and B_1 therapy. Symptoms were relieved.

Case 12: A. C. H., aged forty-four, a farmer, was seen on March 25, 1935, because

No.	*Initials*	*Sex*	*Age*	*Duration of Symptoms*	*Fast. Blood Sugar in Milligrams*	*½ Hr. Blood Sugar in Milligrams*	*1 Hr. Blood Sugar in Milligrams*
1	A. C. J.	M.	54	17 yrs.	100	213	250
2	A. E. S.	F.	59	9 days	109	208	250
3.	L. J. W.	M.	53	4 days	98	201	227
4	S. B. J.	M.	46	3 wks.	90	166	208
5	L. P. J.	F.	24	1 mo.	108	196	222
6	S. H. B.	F.	35	3 yrs.	98	165	200
7	M. W.	F.	56	3 wks.	78	153	217
8	R. F.	M.	38	6 days	83	166	204
9	R. R.	M.	48	2 wks.	115	200	250
10	L. C.	M.	51	1 yr.	95	166	212
11	J. W. F.	F.	46	3 yrs.	122	172	238
12	A. C. H.	M.	44	4 wks.	90	146	192
13	V. T. O.	M.	40	5 mos.	100	200	277

of pain down the back of the right leg of four weeks' duration. The pain interfered with stooping, sleeping, and walking. Examination disclosed pain along the course of the right sciatic nerve and Lasegue's sign. Tolerance test: 90, 146, 192. Treatment: Diet, insulin, and B_1 therapy. He was relieved.

Case 13: V. T. O., aged forty, a farmer, entered the hospital on June 5, 1938, with severe pain down the back of the left leg. Seven years previously he had had the pain down the right leg, and was relieved by tonsillectomy. Five months before admission he had pain down the left leg, sharp and lancinating, requiring opiates. Examination disclosed tenderness along the course of the left sciatic nerve, Lasegue's sign, and impaired Achilles reflex. Tolerance test: 100, 200, 277. Treatment: Diet, insulin, and B_1 therapy. The patient's physician reported he was not relieved.

Discussion

The etiology of the neuritis in hyperglycemic patients is obscure. The recent interest in the neuritis due to vitamin B deficiency has produced some observations that tend to support the idea that the so-called diabetic neuritis is due to the same deficiency. Joslin(5) is of the opinion that lack of the vitamin is not the chief factor, although its administration may hasten recovery. Jolliffe(6) has noted that starving subjects develop neuritis faster when given glucose in the vein than without it, and that increased caloric intake requires increased vitamin B_1 intake. If we accept these observations as supportive evidence that hyperglycemia induces vitamin B_1 deficiency, it must be presumed that the unmetabolized carbohydrate enters into some combination with the vitamin B_1 and withdraws it from the tissue or exerts some inhibiting influence.

Summary and Conclusions

Thirteen cases of sciatic pain are presented in which there was no other obvious etiological condition than the hyperglycemic response to the one-hour, two-dose glucose tolerance test.

Eleven of these made complete recovery on diabetic diet, insulin, and vitamin B_1 therapy. The etiology of neuritis in hyperglycemia is obscure, but a tentative explanation is offered.

EARLY SIGNS OF CANCER OF LIP AND MOUTH

1. Cancer of the lip often comes as a fever blister.

2. It may start as a crust or wart-like growth.

3. A fissure or ulcer that is obstinate about healing or has the tendency to recur may be cancer.

4. Cancer of the mouth begins as an ulcer.

5. An indurated mass, or leukoplakia in the mouth often means cancer.

Of course any of the above symptoms may occur on the lip or in the mouth and not be a cancer. If these symptoms are present and do not tend to heal in thirty days they should be considered malignant until proven benign by biopsy and other investigation.

Cancer Committee of the North
Carolina Medical Society.

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5. Joslin, E. P.: The Treatment of Diabetes Mellitus, Philadelphia, Lea and Febiger, 1937, p. 440.

6. Jolliffe, N.: A Clinical Evaluation of the Adequacy of Vitamin B/1 in the American Diet, New Internat. Clin. 4:56, (Dec.) 1938.

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June, 1940

THE PINEHURST MEETING

The eighty-seventh annual meeting of the Medical Society of the State of North Carolina, held at Pinehurst May 13-15, was one of the most successful in the long history of the Society. The attendance broke all previous records, with a registration of 835 doctors. There were no clashes to mar the harmony of the occasion; yet some constructive measures were taken. A comprehensive abstract of the proceedings will be published in a future issue of the North Carolina Medical Journal, and only a few of the high lights will be given here.

President William Allan's addresses, both to the House of Delegates and to the first General Session, perhaps established records for brevity; but both were full of sensible suggestions. The address to the First General Session is published as the leading article in this issue, and will repay careful reading. The one to the House of Delegates, to be published later, suggested a number of changes in the programs of future annual meetings—all well worth considering.

Secretary Tom Long's report showed the society to be in excellent health, with the largest membership it has ever enjoyed, as well as the largest bank balance it has ever had. On his recommendation it was voted to let the House of Delegates begin its annual meeting at 2 p.m. on the first day of the convention, and to continue its session after dinner—thus allowing much more time for deliberation.

The choice of Dr. Webb Griffith, of Asheville, for president-elect, met with general approval. The excellent service he has rendered the society as chairman of the important Committee on Socialized Medicine, and on the last Board of Medical Examiners, is evidence of his fitness for leadership.

The faithful few who remained to witness the installation of Dr. Hubert Haywood as President were rewarded by a splendid inaugural address. Since it will be of general interest to the members of the society, it is published in full in this issue.

The House of Delegates adopted unanimously the recommendation of the Secretary and of the Finance Committee that instead of the abbreviated Transactions an abstract of the proceedings of the House of Delegates be published in an early issue of the North Carolina Medical Journal, together with a roster of the members and the Historical Record of the Society; and that the proceedings of the Woman's Auxiliary be published likewise in a subsequent issue of this journal. This will be done as soon as possible after the stenographic notes of the discussions have been transcribed and put in shape for publication.

The various sections all reported good papers and good attendance. The papers read before the general sessions were well selected. A unique feature of this meeting was that all papers presented to the general sessions were by our own talent. While these were well up to the standard, the opinion was expressed by many that they would not want to see this made a precedent; that they also liked to hear out-of-state speakers occasionally.

One speaker from afar who brought much food for thought was Mr. John M. Pratt, Secretary of the National Physicians Committee for the Extension of Medical Service. He addressed the House of Delegates for thirty minutes Monday evening on the work of the Committee, and made a most favorable impression.

The Woman's Auxiliary was honored at its Pinehurst meeting by the presence of Mrs. Charles P. Corn, President of the Auxiliary to the Southern Medical Association, who gave a very interesting address on "Present Day Opportunities of Service for the Doctor's Wife".

* * * *

INTELLECTUAL HONESTY

One of the rarest virtues under the sun is intellectual honesty. Just as many people would define temperance as refraining from hard liquor, so most people consider honesty as simply abstinence from stealing. And as there are people who do not know the taste of whiskey or brandy, yet will eat gluttonously, so there are those who would not use a postage stamp that had escaped cancellation, yet who will make the most dogmatic statements without definite proof, who will shut their eyes to unpleasant truths, and who will resort to any sort of subterfuge to carry a point in a discussion.

A case of gross intellectual dishonesty was recently aired in the papers, when a Rutherford county minister made the public statement that "the greatest menace to the schools in this state is marijuana, and it is present in all the high schools I have visited." When asked by Dr. Carl Reynolds for names and dates, he ignored the request, but wrote a county school superintendent: "I find that the Board of Health is the organization to look after this matter, and they have a man paid to do it, hence in the future I shall leave it entirely to them." To which Dr. Reynolds quite truly observed that the minister again "has spoken from the mouth out, without regard to the facts"—since nowhere in the State Food and Drug Law is the State Board of Health charged with the enforcement of the law relating to narcotic drugs.

One would think that ministers, of all professional men, would be sure of the accuracy of their information before making such sensational statements as the one in question. Certainly it does not help their standing in the eyes of the world to be dishonest in any way.

Many years ago the pastor of one of the largest churches in Philadelphia—a man with a national reputation as a preacher and platform orator—shocked a group of North Carolina medical students who had gone to hear him by the astounding statement that there were two million poor whites in the mountains of North Carolina dying of hookworm disease. At that time the entire population of North Carolina, white and black, rich and poor, was only about three million. From that time on, this man's influence with these young southerners was completely gone, and with it some degree of respect for the ministry. One who has been faithful over a few things will be made ruler over many things; one who has been dishonest in little things will hardly be trusted in larger things.

It may be recalled that Charles Darwin, when engaged in his monumental work on evolution, found it necessary to record at once every observation that did not fit into the theory he was evolving; otherwise he was apt to forget it. Unfortunately, only too many not only forget all observations contrary to a notion, but deliberately twist observations to fit a preconceived idea.

It is a common experience for a family doctor to be asked by a fond parent to ascribe to smoking or drinking or staying up late at night some such ailment as impetigo or an ingrown toe nail, and to warn the patient that he can never get well unless he gives up the habit. If any doctor is so lacking in intellectual honesty as to be a party to this cheap deception he runs the risk of losing his young patient's respect. Let any doctor so tempted remember the old story of the priest who promised one of his parishioners to reprove her wayward son. He thought he had an excellent opening when, at their next meeting, the young man asked, "Father, what causes lumbago?" "Lumbago, my boy, is caused by drinking, staying up late at night, and running after women." "Well," was the reply, "I just wanted to know. I saw in the paper this morning that the Pope had lumbago."

* * * *

POSTURAL DYSPNEA

A clinical phenomenon that is rather difficult to explain is that of dyspnea in patients with certain heart conditions, especially those associated with marked hypertension. Such patients may be relatively comfortable during the day, even when at work, but have difficulty in breathing at night when they lie down. Many of them learn to sleep in the sitting position, and attacks are far more frequent at night, when the patient is in bed, than when he is up and around. In the *New England Journal of Medicine* for April 11, William D. Reid gives an intriguing explanation, which seems more plausible than the back-pressure theory usually accepted. This explanation may be briefly summarized in the author's own words: "The main point is that there is a hindrance to onflow by a mechanical compression of the pulmonary veins by cardiac enlargement. This conception appears more plausible in relation to postural dyspnea. When the patient lies down the structures that in the upright position are posterior to the heart become the bed for it; in other words, the enlarged heart lies on the pulmonary veins and their radicles."

As to treatment, in the light of this conception, digitalis helps to reduce the size of the dilated heart and improves the circulation through the lungs. More consideration should be paid the patient's posture, possibly to the extent of providing a bed table for greater ease in leaning forward. Removal of fluid accumulations in the thorax is indicated, in order to allow more space.

* * * *

DR. WILLIAM MacNIDER WINS KOBER MEDAL

For many years Dr. William MacNider has been working quietly upon an original idea. Those who have heard him explain his conception of resistance to some diseases because of changes in the cells of certain organs have been convinced that, in the language of the street, "he had something there". With the patience of the true scientist he has done experiment after experiment to establish the soundness of the thought that had come to him. Now it is pleasing to his numerous friends and former pupils to know that his work has been recognized by high authority. At the last meeting of the Association of American Physicians, held in Atlantic City May 7 and 8, it was announced that the Kober medal for 1941 would be awarded to Dr. MacNider for his work in experimental nephritis and in tissue changes and resistance.

The NORTH CAROLINA MEDICAL JOURNAL, on behalf of the doctors of North Carolina, extends heartiest congratulations to Dr. MacNider.

THE GENERAL PRACTITIONER AND HIS HANDBAG

In his recent book, THE PATIENT'S DILEMMA, Dr. Hugh Cabot quotes the following statement from Dr. Morris Fishbein: "Obviously, 85 per cent of the diseases for which patients consult doctors are of the type which the general practitioner can handle with the amount of equipment that he can carry in a handbag." Dr. Cabot's comment is, "We shall, I think, be on sound ground in asserting that this statement never was true and that it is even less true today . . . I am unaware of any evidence . . . acceptable to any scientific body which would support Dr. Fishbein's allegation."

In an effort to find out which of these views was correct, five Winston-Salem medical men tabulated an average of 200 consecutive cases each. Of the 1000 patients thus reviewed 848—or 84.8 per cent—had been cared for without any other equipment than the contents of a handbag. A modern doctor's handbag, be it remembered, contains at least a blood pressure apparatus, a stethoscope, a hypodermic syringe, an otoscope, an ophthalmoscope, a transillumination light, a blood counting apparatus, glass slides, a hemoglobin scale, a pleximeter, tongue depressors, Wassermann tubes, culture tubes, and a few other odds and ends.

In tabulating these cases, every patient who had to have a basal metabolism reading, an x-ray, an electrocardiogram, an operation or a surgical consultation, or who was referred to a clinic for a diagnostic survey was included in the referred group—even if the doctor had his own basal metabolism apparatus or electrocardiograph. A considerable number of these referred patients, it should be noted, were beyond real help from any medical source: for example, some with arthritis, some with incurable mental disease, and a few who literally enjoyed poor health too much to exchange it for an active existence.

The lowest proportion of patients cared for unaided by an individual doctor was 82 per cent; the highest, 89. The average of 84.8 per cent is certainly close enough to 85 to be acceptable to most scientific bodies as supporting Dr. Fishbein's statement.

CASE REPORTS

UNDULANT FEVER

Report of Two Cases

William Raney Stanford, M.D., F.A.C.P.*
George Geyerhahn, M.D.†

Durham

The purpose of this paper is to report two cases of undulant fever with especial emphasis on therapeusis. Unfortunately, we were not able to get positive blood cultures on either of these cases, but the agglutination test for undulant fever was positive in both. This, coupled with their clinical courses and their response to therapy is, I think, enough to clinch the diagnosis.

Case Number 12874

B. A. H., a white male, aged forty years, was admitted to Watts Hospital on June 26, 1939. His chief complaints were loose stools, fever and chills.

History: The patient was well until three or four years ago, when he began having attacks of alternating constipation and diarrhea. His stools varied from semi-formed to liquid over a period of months. The condition seemed to clear up spontaneously, and until several months before admission he was apparently all right except for an occasional attack.

Three or four months before admission he had an attack of "flu", and about one month later had a deep cold which was followed by loose stools and some slight pain across the lower abdomen. The loose stools never showed any blood and were never very numerous, but had a foul odor and did not respond to any treatment.

Since that time he had been taking vitamins, and recently started a course of "Yatren", with no apparent benefit. He said he had not had a solid stool in two months.

Three weeks prior to admission he began running a little fever, but was not ill enough to quit work. A few days before admission he had a slight chill, and following this his temperature went as high as 100° each evening. He had had no nausea, vomiting or loss of appetite. There had been no severe pain, and no pus or blood in stools. He had had a non-productive cough, and an occasional night sweat, but no hemoptysis.

Past history was negative. He had had the usual childhood diseases, but no serious illness. He was operated on twelve years ago for appendicitis. Family history was negative.

Physical Examination: Blood pressure in the left arm was 135/90 and in the right arm 140/90. Pupils reacted to light and accommodation. Ocular movements were normal. Hearing was very slightly impaired in the right ear. The teeth showed quite a bit of dentistry. The gums were slightly boggy. The tongue was coated. The tonsils had been removed. There was no adenopathy or abnormal pulsations in the neck. Expansion of chest was fair and equal. The percussion note was normal throughout. Breath sounds were increased and whispered voice prolonged over upper right lung, but no rales were heard. The supracardiac dullness was 2 cm. in the second interspace, 3.5 cm. in the third interspace. The left border of the heart was 9.5 cm. and the right border was 3.5 cm. Heart rate was regular, 108. There were no murmurs. The aortic second sound was snappy. No epitrochlear glands were palpated. There was a very slight tremor of the fingers. The radial pulses were equal. Temporal vessels were very slightly tortuous.

The abdomen was slightly full. The cecum was palpable and somewhat thickened and slightly tender. There was a lower right quadrant appendectomy scar. There was some tenderness apparent when pressure was applied below the right rib margin. The sigmoid was not palpable. There was no lumbar tenderness. No other organs were palpated. There was an incomplete right inguinal hernia. The genitalia were normal. Rectal examination revealed a slight hemorrhoidal tag. There was evidence of an old anal fissure anteriorly. The prostate was very slightly enlarged.

Biceps and triceps tendon reflexes were present and normal. There was no edema. The feet were negative except for slight ringworm infection.

Progress while in the hospital: The patient ran a febrile course during all the first part of his stay in the hospital. On July 7, his spleen was first palpated. On July 24, his agglutination for undulant fever was complete in a 1-20 dilution and partial 1-40. On July 26, it was complete 1-80 and partial

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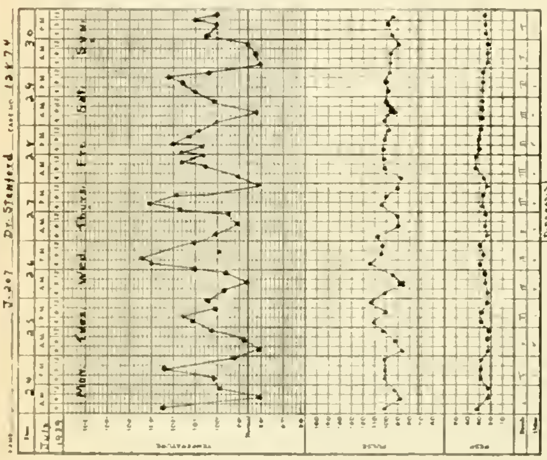
*Chief of the Medical Staff, The Watts Hospital.
†Member of The Watts Hospital Interne Staff.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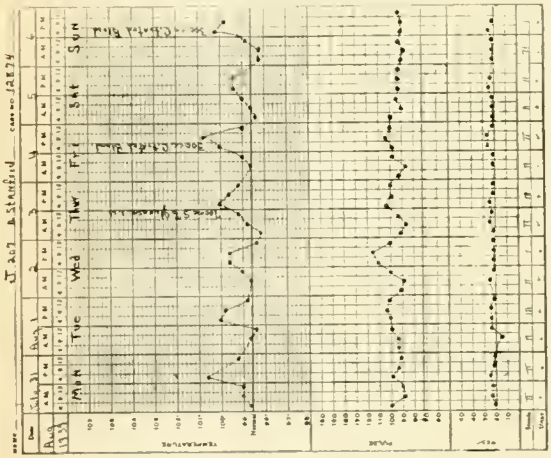
Dr. Stanford
CASE NO. 12874
July 1939
Mon. Tues. Wed. Thurs. Fri. Sat. Sun.
Diagnosis established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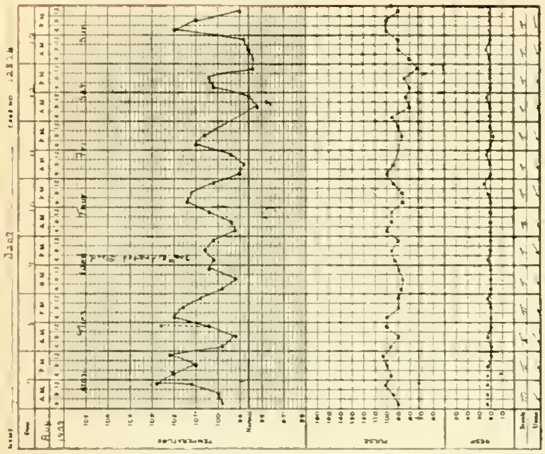
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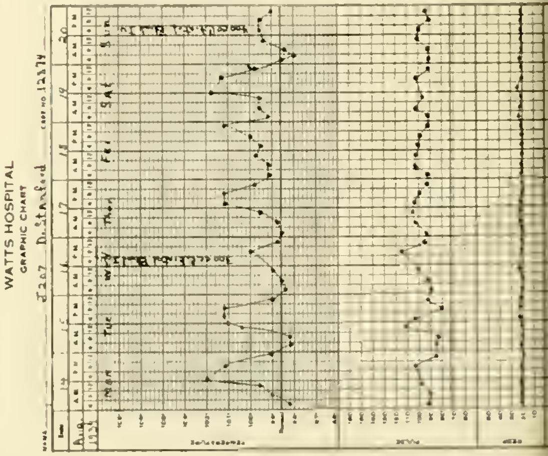
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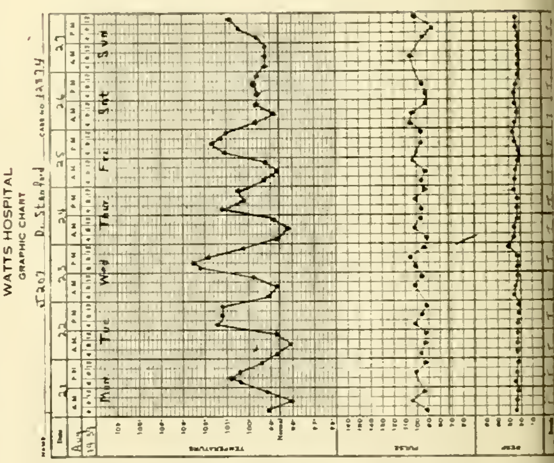
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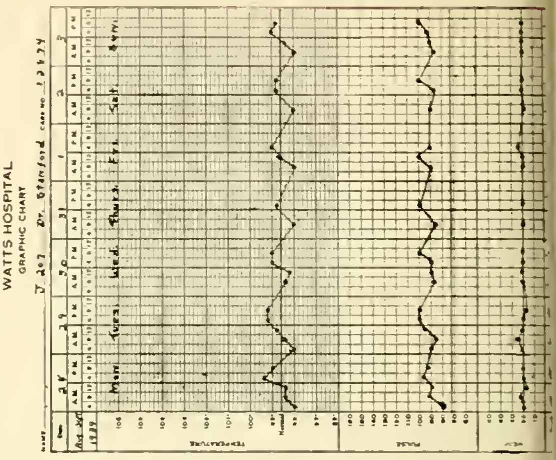
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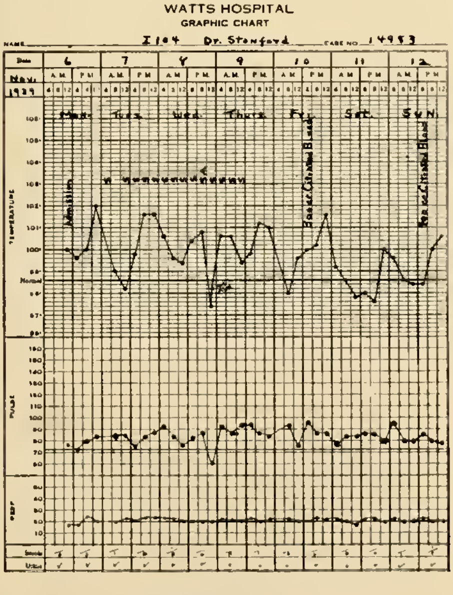
Mon. Tues. Wed. Thurs. Fri. Sat. Sun.

1-160. On August 3, it was complete 1-160 and partial 1-320. On July 31, he was given an intradermal test of .1 cc. of 1-5 dilution of Lederle's Brucella Melitensis vaccine, 1,000,000,000 bacteria per cc. This was negative after forty-eight hours. On August 4, he was given his first transfusion of 400 cc. of citrated specific blood. Beginning on August 4, he received several doses of Brucella Melitensis vaccine. The vaccine did not seem to benefit him in any way, and it seemed to lower his agglutination titre, which dropped from 1-160 on August 3, to 1-40 on August 7. He received five tranfusions of citrated specific blood—the first 400 cc. in amount; the others 300 cc.

Laboratory Examinations: On June 26, the urine showed the specific gravity to be 1.021, albumin negative, sugar negative, an occasional red blood cell and a few white blood cells. His blood count showed a hemoglobin of 112 per cent; white blood cells, 13,400; polymorphonuclears, 77 per cent; eosonophiles, 4 per cent; lymphocytes, 19 per cent. On July 8 his hemoglobin was 75 per cent; red blood cells, 3,180,000; and white blood cells, 32,000. Another blood count was taken on August 9, and his hemoglobin then was 102 per cent; white blood cells, 9,150; polymorphonuclears, 70 per cent; eosonophiles, 2 per cent; lymphocytes, 27 per cent; and monocytes, 1 per cent. On July 25 his stool specimen was positive for red blood cells and white blood cells, and was negative for parasites. On July 18 his blood smear for malaria was negative. His Widal agglutination on August 16 was negative. The blood culture on July 17 was negative; Wassermann and Kahn reactions were also negative. On July 17 his sputum was negative for acid fast bacilli, and on July 26 his Weil-Felix was negative. His icterus index was normal on August 7.



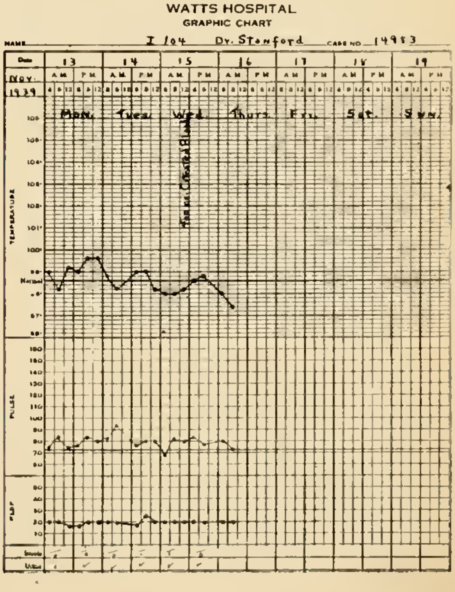
S—Sulfanilamide, gr. XV
A—Aspirin, gr. V

The patient was discharged from the hospital on September 4, 1939, much improved.

Case Number 14983

J. B. E., a white male physician, married, aged 31 years, was admitted on November 6, 1939. His chief complaints were general weakness, aching of muscles, joints and bones.

History: Eight days previous to admission the patient had pains in joints, muscles and bones. Six days previous to admission he had the same complaints, especially in the afternoon, with a temperature of 100.5°. At this time he had a chilly sensation. He could not get clothes and blankets enough to be comfortable. He took aspirin and perspired afterwards. After this profuse perspiration he was more comfortable, but very weak. He noticed later that he became comfortable after these chills regardless of whether he took aspirin or not.



Four days previous to admission he had to quit his work because of general malaise.

Three days previous to admission he had a temperature of 103°. Before noon his temperature was usually normal. He had been in bed for four days before admission to the hospital.

Past History: The patient had had the common childhood diseases; left otitis media; malaria in 1921; tonsillectomy; appendectomy in 1935.

Physical examination was essentially negative, except for some impairment of hearing in the left ear, and a slight discharge from the nose.

Laboratory studies showed a hemoglobin of 105 per cent; white blood cells, 6,200; polymorphonuclears, 60 per cent; lymphocytes, 38 per cent; monocytes, 2 per cent. Malaria was not found. The urine was neutral in reaction; there was a faint trace of albumin, no sugar, and a few leukocytes. On November 14 the urea nitrogen was 20.4 mg. per 100 cc. of blood and the blood urea was 46.6 mg. per 100 cc. of blood. On November 7 the agglutination for Br. abortus was complete through 1-160 and partial through 1-320. On November 8 the agglutination for Br. abortus was complete through 1-320.

X-ray of the sinuses showed a polyp in both the right and left antrum. The x-ray of the chest showed the lungs to be negative.

On November 7 the patient was given 75 grains of sulfanilamide; on November 8, 90 grains; on November 9, 45 grains; and none thereafter. On November 10, he received his first transfusion of 300 cc. of citrated specific blood. On November 12, he received a second transfusion of 400 cc. of citrated specific blood. On November 15, he received his third and last transfusion of 400 cc. of citrated specific blood. He was discharged from the hospital afebrile and much improved on November 15, 1939.

Comment

Much has been written about the treatment of undulant fever. The literature has contained many articles on the therapeutic aspects of this condition for the last several years. Therefore the various treatments will not be detailed here. Sulfanilamide was given a therapeutic trial in both of these cases. It was definitely not helpful in the first case. In the second case we do not feel that it had a thorough trial. It made the patient so uncomfortable that he did not wish to continue to take it.

No therapeutic procedure which was tried influenced the course of the first case in any way, until immune transfusions were given. Following the first transfusion his temperature remained lower than usual for almost two days. He received his last transfusion on August 20, 1939. During the course of the transfusions the temperature was quite irregular, but the gradual trend was downward. At the same time the patient showed gradual improvement in other ways. Of particular interest in this case was the fact that he showed much more immediate improvement after transfusions from some donors than from others. This may, of course, have been due to the agglutination titre, but another possibility is that there are different strains of this organism with resultant variation in the agglutinins.

The second case was given three transfusions of immune blood. Following his first transfusion his temperature began to come down and he was afebrile before he left the hospital. The first case four months after leaving the hospital is in satisfactory condition. The second case two and a half months after discharge is apparently well.

Conclusion: We realize that it is presumptuous to draw any conclusions from two cases, but it would seem that immune transfusions are fairly effective therapeutic agents in this condition. If other investigators get the same results with this treatment in similar cases, it would seem rational and feasible for patients who have recovered from this condition to have their blood typed and their agglutination titre estimated, and to be registered at the local hospitals as possible donors. Undulant fever is such a distressing and prolonged disease, that it behooves us to use every rational available aid to shorten its course.

The possibility of utilizing the general hospital as an effective medium for case-finding in tuberculosis has not been sufficiently explored. The fact that a person is admitted to a general hospital for a condition other than tuberculosis should never be accepted as a guarantee that such person does not have significant tuberculous disease. In a study of 4,853 adult admissions to 14 general hospitals in New York State, 1.1 per cent showed clinically significant tuberculosis and 0.6 per cent unsuspected tuberculosis. Plunkett, R. E., M.D., and Mikol, Edward X., Amer. Rev. of Tuber., Mar., 1940.

CLINICO-PATHOLOGICAL CONFERENCE

City Memorial Hospital

Winston-Salem

This patient, a white male forty-five years of age, was admitted to the hospital complaining of persistent vomiting for ten days.

The patient's present illness began about one year previously with continuous occipital headache. This headache had not been relieved by the use of a considerable amount of proprietary headache powders. A sinus infection had been drained without relieving the headache. About seven months before admission the patient began to develop dyspnea made worse on exertion, and had to sleep with his head elevated by two or three pillows. He was admitted to the hospital five months previously because of his persistent headache. At this time his blood pressure was 210 systolic and 138 diastolic. There was a heaving impulse over the apex of the heart, and the apex was described as being in fifth inter-space in the mid-clavicular line. There were no murmurs or thrills. No edema was present. A consultant who examined the sinuses reported a chronic infection of the antrum "without any activity at present." This was verified by x-ray.

Laboratory work at this time showed albumin (1 plus) in the urine, 10-15 granular casts, occasional red blood cells and a specific gravity of 1.028. The blood count was essentially normal. The non-protein-nitrogen was 57.8 mg. per 100 cc. The urinary excretion of phenolsulphonthalien was 80 per cent in two hours. Ten days later the non-protein-nitrogen was 31.6 mg. per 100 cc. The patient remained in the hospital twelve days; his general condition improved, but his blood pressure remained unchanged.

He was admitted the second time five months later, and stated that during the interval his headache had increased and that during the last ten days before admission he had begun to vomit. This vomiting became progressively worse, and on admission he was unable to hold anything on his stomach. The vomiting was always associated with nausea and was not projectile in type. During the last week he had noticed some weakness in his left arm, and his vision had been failing.

Physical examination revealed small pupils, but no changes in the pupillary reflexes. There was pronounced pulsation of the carotid artery. The lungs were clear. The heart was enlarged to the right and somewhat to the left, and the apex beat was prominent. The rate and rhythm were regular. The blood pressure was systolic, 230; diastolic, 140. There was no edema of the extremities. Examination of the urine showed a four plus reaction for albumin, specific gravity, 1.014, four plus white blood cells, occasional epithelial cells, and numerous casts. There were 3,475,000 red blood cells, with hemoglobin of 12 grams. The white blood cells were 10,200, with 79 per cent polymorphonuclears, 20 per cent lymphocytes and 1 per cent monocytes. The urea nitrogen was 64.4 mgs. per 100 cc. The non-protein-nitrogen was not obtained.

The patient continued to have headache and vomiting and his blood pressure remained elevated for the first four days. On the fifth hospital day the patient was semicomatose, respirations were 12 and the blood pressure was 190 systolic and 130 diastolic. His pupils were equally contracted. He had expectorated a small amount of blood. During the fifth hospital day he developed pulmonary edema, his blood pressure gradually fell, and he expired.

Clinical Discussion

The most outstanding feature of this case is the history of persistent headache of almost a year's duration. This was found after several months to be associated with a high blood pressure. The marked elevation of the diastolic pressure is especially significant in indicating disease of the small vessels. At the time of the patient's first admission the dyspnea on exertion and the inability to sleep without elevation of the head and chest, plus the elevation of the non-protein-nitrogen, indicate early cardiac failure. The urine at this time was not diluted, but the presence of albumin and casts is significant. Probably the most common causes of elevation of blood pressure in a man of this age are so-called essential hypertension, chronic nephritis and a long standing pyelonephritis. The past history does not indicate any acute episode of glomerular nephritis or of infection of the urinary tract. This, therefore, appears to me to be a simple case of essential hypertension or arteriolarnephrosclerosis. The extremely rapid course of less than a year's duration and the fact that in the five months between the first and second hospital admissions there was a marked increase of kidney damage, as evidenced by the increase in albumin and the lowering of the specific gravity, would seem to indicate that this is an acutely progressive lesion of the small vessels. It is unfortunate that the eye grounds were not examined, as the vessels would probably have given information of great value. An article which recently appeared in the *New England Journal of Medicine*(1) attributes nocturnal dyspnea to the pressure of an enlarged heart on the pulmonary veins. That would probably explain the nocturnal dyspnea in this individual. The failing vision, weakness of the left arm, and vomiting are probably all manifestations of impending uremia. The failing vision may, however, have been due to local lesions in the eye-ground. My diagnosis therefore is:

Arteriolarnephrosclerosis, with acute necrotizing lesions of the small vessels.
Cardiac hypertrophy.
Pulmonary edema.

Clinical Diagnosis

Malignant hypertension with arteriolarnephrosclerosis
Central nervous system irritation from excessive pressure
Retinal sclerosis with diminished visual acuity

Post-Mortem Diagnosis

Arteriolarnephrosclerosis, necrotizing.
Cardiac hypertrophy and dilatation.
Congestion of the lungs.
Cloudy swelling of the liver.
Distention of the gall bladder.

Pathological Discussion

At autopsy this was seen to be a typical case of the acute necrotizing type of arteriolarnephrosclerosis. The heart weighed 520 grams and showed very marked hypertrophy, involving chiefly the left ventricle. The right side of the heart was dilated. There was a severe degree of pulmonary edema. The liver was enlarged and swollen. The gall bladder was greatly distended by thick black bile which was easily expressed into the duodenum. There was no thickening of the wall of the gall bladder, and no calculi were present. The kidneys were the organs of chief interest. They weighed 150 grams each, and were relatively normal in size and shape. Upon stripping the capsule a dark purplish-red, uniformly finely granular surface was present, from which projected numerous small, elevated, yellowish-gray nodules. Minute petechiae were scattered over the surface. The cortices were narrowed, averaging only 5 mm. in thickness. The average cortex measures 7 mm. The striations were extremely difficult to see and were very irregular, and the entire cortex was irregularly mottled with small yellow and red areas. The cut ends of the small vessels remained patent and projected above the cut surface, indicating thickening. There was no evidence of present or previous inflammation in the pelves, ureters or bladder. Microscopic sections of the kidney revealed findings typical of the acute arteriolitis which occurs in malignant hypertension, with necrosis of the small arterioles. This necrosis was patchy but widely distributed. There were no glomerular lesions except those which were considered secondary to the arteriolar damage. An unusual feature about this case is the fact that this man's death seems to be due about equally to uremia and cardiac failure. Generally one or the other clinical syndrome predominates, but in this case the two clinical pictures were almost evenly balanced — though uremia was perhaps slightly more in evidence.

The Patient's Welfare.—When faced with diagnostic difficulties, the practitioner is influenced by practical considerations, such as the relative frequency and the therapeutic approachability of the diseases suspected. The patient's welfare receives first consideration. He is particularly desirous of avoiding a mistake in diagnosis, which in turn would deprive the patient of therapeutic benefit. The possibility of missing the diagnosis of a case of incipient pulmonary tuberculosis, of a meningioma or of an islet tumor of the pancreas will prey on his mind more than failure to diagnose malignant nephrosclerosis or dissecting aneurysm. In his diagnostic work he takes great advantage of negative as well as of positive correlations. He knows that certain combinations of symptoms and signs rule out the possibility of certain diseases. In contrast to that of an inexperienced physician his search will be a well directed one.—Soma Weiss, M.D.: The Medical Student Before and After Graduation, J.A.M.A. 114:1715 (April 27) 1940.

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1. Reid, Wm. D.: Engorgement of Pulmonary Vein by Extension of Cardiac Enlargement Posteriorly, New England J. Med. 222:627 (April 11) 1940.

BULLETIN BOARD

PRESIDENT'S MESSAGE

It is with a feeling of pride that I acknowledge publicly my gratitude to you for elevating me to the leadership of our Society for the coming year—especially so when I consider my really great predecessors. It is with a sense of gratification that I say that I am steeped in the traditions of the Medical Society of the State of North Carolina. My grandfather, Dr. E. Burke Haywood of Raleigh, and his first cousin, Dr. R. B. Haywood of the same city, served as presidents. My every effort will be so to conduct the affairs of the society which come under my guidance that I may be able to justify your choice of leadership.

Having served on your legislative committee and other committees, as well as on the State Board of Health, I have a full realization of the duties of this office. With your help, it will be my pleasure to perform them to the best of my ability.

We realize that more is going to be expected and demanded of our organization as a social agency. We will have to come into more intimate contact with already existing organizations devised to improve human happiness. We will have to play an increasingly important role in the life of the individual as well as in the welfare of society. We will have to give the problems of social medicine the proper study, and approach them with the broad outlook that each situation demands. It is inconceivable that the private practice of medicine will ever cease, although certain departures from present day practice are inevitable. We are recognizing our share of the responsibility for the health and social welfare of the public. May I call attention to the programs under way in which we are cooperating: maternity and infancy care, tuberculosis and syphilis control. There are, however, other state and governmental agencies, which are seeking to secure better food, better living and better housing facilities for the underprivileged. If we can coordinate our efforts with those agencies so that an accord may be reached, a better spirit and feeling for us is bound to be engendered.

I should like to see the Medical Society of the State of North Carolina sponsor an adequate program of mental hygiene in the state, coordinating all of the state agencies which now work independently. Cannot we unite these efforts and establish a program which will soon reduce the 7,500 inmates of asylums, and an untold number outside of institutions, to a higher level of usefulness to society? Already existing laws concerning public health can be broadened, and by placing more emphasis on their enforcement, great good to the state can be accomplished. Our own *esprit de corps* should be maintained at all costs, and the unprepared, the unworthy, and those alien to us in thought, training, and action should not be admitted to our ranks.

I thank you for this great honor and for this opportunity for service.

Inaugural address, before the Third General Session of the Medical Society of the State of North Carolina, Pinehurst, May 15, 1940.

CATAWBA VALLEY MEDICAL SOCIETY

The Catawba Valley Medical Society met on May 23 at the Western State Hospital in Morganton. The program, presented by members of the hospital staff, was as follows:

Opening Remarks—Dr. F. B. Watkins, Superintendent of the Hospital.
"Post Encephalitic Parkinsonism", with demonstration of cases—Dr. John S. McKee.
"Huntington's Chorea," with demonstration of cases—Dr. Allan McLean.
"Routine Procedure on Each New Admission"—Dr. R. H. Long and Dr. W. E. Brown.
Demonstration and Discussion of Mental Symptoms—Dr. J. M. Grimes.
Demonstration of the Paretic Curve in the Colloidal Gold Test—Dr. Lucien Achard.
Dental Treatment at the Western State Hospital—Ralph D. Coffey, D.D.S.
Discussion of Metrazol, with Demonstration of Its Use—Dr. J. R. Saunders.

VIRGINIA-WEST VIRGINIA ANNUAL MEETING

The Medical Associations of Virginia and West Virginia, for the first time in their history, will hold a joint annual meeting. In honor of this reunion, members of the neighboring state societies are invited to attend the meeting, which will be held at White Sulphur Springs, West Virginia, July 29-31. An unusually fine scientific program has been arranged.

MECKLENBURG COUNTY MEDICAL SOCIETY

At the first May meeting of the Mecklenburg County Medical Society, held on May 7, Dr. Paul W. Sanger presented a paper on "Suppurative Pulmonary Conditions", illustrated with movies, and Dr. Hillis L. Seay read a paper on "Pleural Effusions". On May 21 Dr. Addison Brenizer showed colored movies of goiter surgery, with discussion, and Dr. Rowland T. Bellows gave a paper on "Treatment of Head Injuries".

GUILFORD COUNTY MEDICAL SOCIETY

The Dr. David A. Stanton meeting of the Guilford County Medical Society was held at the Sheraton Hotel in High Point on May 2. The following program was presented:

Invocation .... Rev. E. H. Blackard
Introduction of Guests .... W. L. Jackson, M.D.
Dinner
David A. Stanton, M.D., F.A. C. S.—"An Appreciation"—Frederick R. Taylor, M.D.
David A. Stanton, "The Citizen"—Mayor O. A. Kirkman
Response .... Dr. Stanton
Scientific Program:
'Lymphogranuloma Venereum" — J. Lindsay Cook, M.D., Greensboro.
'Allergic Dermatitis"—David M. Pipes, M.D., Greensboro.

BUNCOMBE COUNTY MEDICAL SOCIETY

On May 6 Dr. W. W. Bauer of Chicago, Director of the Bureau of Health and Public Instruction of the American Medical Association, was the guest speaker of the Buncombe County Medical Society. On May 20 Dr. R. A. White described a case of extrauterine pregnancy which he and Dr. H. S. Clark successfully delivered by section at term.

NEWS NOTES FROM THE STATE BOARD OF HEALTH

On the occasion of the twenty-fifth anniversary of his coming with the State Board of Health, Dr. G. M. Cooper, Assistant State Health Officer and Director of the Division of Preventive Medicine, was presented with a silver ink-stand, the gift of associates in the Department. The presentation was made by his assistant, Dr. Emmet Lupton.

Dr. Cooper became Assistant State Health Officer on March 1, 1923, under Dr. Watson S. Rankin. He was Acting State Officer from September 1, 1923, to September 1, 1924, while Dr. Rankin was on leave in New York. He has edited The Bulletin of the State Board of Health since March 1, 1923.

On the resignation of Dr. Rankin, May 30, 1925, Dr. Cooper was unanimously elected Acting State Health Officer, in which capacity he served until October 1, 1926. On July 1, 1931, when Dr. James M. Parrott became State Health Officer, Dr. Cooper assumed his duties as director of Maternal and Child Health Services and resumed his duties directing school health supervision work. He also continued the work of director of health education, including the editorship of The Bulletin.

On November 10, 1934, following the death of Dr. Parrott and the election of Dr. Carl V. Reynolds as State Health Officer, Dr. Cooper was unanimously elected Assistant State Health Officer. He has also continued with his other duties.

A native of Sampson County, Dr. Cooper was born in Clinton, April 24, 1876. He was educated in public and private schools in that county and taught for four years. He graduated in medicine from the University College of Virginia in 1905 and located in Clinton, in partnership with Dr. Frank H. Holmes, with whom he practiced for nine years. For the last four years of that period, he was part-time county physician. He retired from the private practice of medicine to become whole-time health officer in Sampson, October 1, 1913, being the fifth whole-time health officer elected for that kind of work in the state of North Carolina.

NEWS NOTES FROM DUKE UNIVERSITY SCHOOL OF MEDICINE

On April 26, Dr. Edward A. Schuman, Professor of Obstetrics, University of Pennsylvania School of Medicine, lectured on "Puerperal Infection".

At the monthly meeting of the Duke University Medical Society, May 9, Dr. Thomas Addis, Professor of Medicine, Stanford University School of Medicine, lectured on the "Treatment of Glomerular Nephritis".

NEWS ITEMS FROM UNIVERSITY OF NORTH CAROLINA SCHOOL OF MEDICINE AND DIVISION OF PUBLIC HEALTH

At the recent meeting of the Association of American Physicians it was announced that the Kober medal for 1941 would be awarded to Dr. William deB. MacNider for his outstanding work in experimental nephritis and in tissue changes and resistance.

* * * *

Dr. William L. Fleming attended the annual meeting of the American Society for Clinical Investigation, of which he is a member, on May 6 at Atlantic City. He also attended the meeting of the Association of American Physicians which was held in Atlantic City on May 7 and 8.

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Dr. David E. Plummer, Director of the Venereal Disease Clinic, Durham City-County Health Department, has been appointed Assistant Professor of Clinical Syphilology in the Division of Public Health, University of North Carolina.

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Dr. Thomas Parran, Surgeon General of the U. S. Public Health Service, paid a visit to Dr. M. J. Rosenau and the Division of Public Health on April 23.

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Dr. T. F. Vestal, Director of the Division of Industrial Hygiene of the North Carolina State Board of Health, lectured to the medical students on "Silicosis and Harmful Dusts" on May 8.

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Mr. M. F. Trice, of the Division of Industrial Hygiene of the N. C. State Board of Health, lectured to the students in public health during the spring quarter on "Definition of Industrial Hygiene, Historical Scope and Control" and on "State Administration of Industrial Hygiene, State Laboratories for Industrial Hygiene Control".

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Dr. M. J. Rosenau and Dr. Harold W. Brown, of the Division of Public Health, were in Washington on May 6, 7 and 8 for the meeting of the State and Territorial Health Officers of the United States with the Surgeon General of the U. S. Public Health Service.

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Dr. Harold W. Brown went to New York on May 8 to carry out some nutritional research that he is doing in cooperation with the Milbank Memorial Fund. While there he made observations on the teaching of health in the schools.

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Dr. Ralph K. Collins, a member of the staff of the International Health Division of The Rockefeller Foundation, connected with the European office of the Foundation for the past fourteen years, came to Chapel Hill on May 24 to visit the Division of Public Health.

NOTES FROM THE NORTH CAROLINA TUBERCULOSIS ASSOCIATION

Beds now being provided, with those already in use, make a total of 3,020 in North Carolina for tuberculosis patients. There are now 19 County Sanatoriums with a total bed capacity of 855. There are 1,315 beds in State Sanatoriums and the State Hospital for the Insane, and 850 beds at the Federal Hospital at Oteen. The construction of the Eastern North Carolina Sanatorium in Wilson in the near future will materially increase the number of beds available in State Sanatoriums.

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Dr. R. L. Carlton was re-appointed as the representative director of the National Tuberculosis Association.

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The Annual Meeting of the National Tuberculosis Association, the American Trudeau Society, and the National Conference of Tuberculosis Secretaries was held in Cleveland, Ohio, June 3-6.

WARNING

Numerous complaints have reached the Registry of Medical Technologists regarding the activities of a Mr. C. A. Bartholomew of Red Bank, New Jersey, who has launched an organization styled the "American Medical Technologists" which purports to issue certificates of qualification. It is soliciting membership especially among graduates of non-approved schools or those who are ineligible for examination by the standards of the Registry.

Bartholomew has never taken the Registry examination but assumes the designation of M.T. after his name in his drive for membership. He has also presumed to give approval to a number of commercial schools which are not approved by the Registry.

This enterprise is not sponsored by any scientific society but appears to be motivated by commercial aspects, as a $5.00 registration fee is solicited from those desiring to join.

To obviate any confusion of this unauthorized movement with the legitimate work of the Registry of Medical Technologists of the American Society of Clinical Pathologists, this warning is issued to all interested in maintaining high standards to disseminate the true information to the unwary about the standing of the so-called "American Medical Technologists."—American Journal of Clinical Pathology, 10:261 (March) 1940.

NEWS NOTES

Dr. Oren Moore gave a paper on "The Part of Pre-Natal Care in a Public Health Program" before the South Carolina State Health Association, meeting at Myrtle Beach in May.

* * * *

Dr. R. B. McKnight read a paper by Dr. Addison Brenizer on "True Adenomas of the Thyroid Gland and Their Relation to Carcinoma" before the recent meeting of the Association for the Study of Goitre which was held at Rochester, Minn.

* * * *

Dr. William Allan addressed the Association of American Physicians, meeting in Atlantic City May 6-8, on "Morbid Heredity Wholesale".

WOMAN'S AUXILIARY

OFFICERS, 1940-41

President: Mrs. Clyde R. Hedrick, Lenoir

President-Elect: Mrs. Sidney Smith, Raleigh.

First Vice President (Organization): Mrs. C. F. Strosnider, Goldsboro

Second Vice President (McCain Bed): Mrs. F. M. Hauser, Cherryville

Third Vice President (Loan Fund): Mrs. John S. Hooker, Chapel Hill

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- Research: Mrs. R. S. McGeachy, New Bern
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- Exhibits: Mrs. C. D. Thomas, Sanatorium
- Legislature: Mrs. Joseph A. Elliott, Charlotte
- Jane Todd Crawford Memorial: Mrs. Frederick R. Taylor, High Point.

PRESIDENT'S MESSAGE

To Officers and Members of the Auxiliary:

With a deep sense of appreciation of the honor you have conferred upon me, I am none the less aware of its many responsibilities. However, the trust you have placed in me is reciprocated and I shall avail myself of every opportunity to serve you in the same wholesome spirit that I shall ask you to serve the Auxiliary. With this hope of mutual helpfulness we shall be stimulated and encouraged in our endeavors to secure and maintain a larger and more serviceable organization.

It is my hope during the coming year that the membership of the Auxiliary may be greatly increased. I feel that, with the many problems facing the medical profession today, it is very important that every doctor's wife become a member of the Auxiliary and become educated to the problems.

Sincerely,
MRS. CLYDE R. HEDRICK.

BOOK REVIEWS

The Compleat Pediatrician. By W. C. Davison, Professor of Pediatrics, Duke University School of Medicine. Price $3.75. Ed. 3. Durham, N. C.: Duke University Press, 1940.

This reviewer has cast a roving eye over many a system of medicine, many a practice of pediatrics, many a compendium of diagnostic and therapeutic measures, and has wondered how one encyclopedic head could ever have assembled so much material in such a limited amount of space. But Wilburt C. Davison's **Compleat Pediatrician** leads them all in condensing all that a doctor needs to know about one specialty between the covers of a small and handy volume.

The information that is so amazingly comprehensive is not crowded and jumbled together; nor is the small type difficult to read. The cross-referencing is masterly, and makes it possible to run down a symptom, a test, a therapeutic measure or a physical sign in no time at all. Strange to say, this dictionary-cyclopedia-Baedeker of pediatrics reads well.

Dr. Davison deprecatingly likens his opus to a telephone book, or a mail order catalog without pictures. Neither of these could hold this reviewer's attention for a moment; the **Compleat Pediatrician** does, for longer than he can afford to spend on it.

Peripheral Vascular Diseases: Diagnosis and Treatment. By William S. Collens, M.D., Metabolist, Chief of the Clinic for Peripheral Vascular Disease, Israel Zion Hospital, Brooklyn; Associate Visiting Physician, Greenpoint Hospital; Metabolist, Brooklyn Women's Hospital; and Nathan D. Wilensky, M.D., Assistant in Clinic for Peripheral Vascular Disease, Assistant in Diabetic Clinic, Israel Zion Hospital; Assistant Visiting Physician, Kings County Hospital. Price, $4.50. Pp. 243. Springfield, Illinois: Charles C. Thomas, 1939.

Within the past few years interest in diseases of the blood vessels—particularly of the peripheral vessels—has increased tremendously. With this increased interest the literature on the subject has been so extensive that it is hard for the busy practitioner to keep up with it. The work of Collens and Wilensky brings this mass of information into a compact and practical book that can be absorbed by the average practitioner in a few hours. Approximately the first half is devoted to a clinical discussion of vascular disease, including acute and chronic arterial obstruction, peripheral vascular sclerosis, thrombo-angiitis obliterans, the Raynaud phenomenon, and vasodilation. The fact that the last half is devoted to treatment is encouraging in itself. It may be thought that perhaps undue emphasis is placed upon the authors' method of treatment known as intermittent venous return, which calls for a rather complicated and doubtless expensive apparatus; yet it apparently offers the patient more relief than any other form of treatment.

The book goes fully into various medical and surgical methods of treatment, with indications for each, and detailed explanations of their use. It is the best book on the subject that this reviewer knows of, and can be highly recommended to all practitioners.

Chemotherapy and Serum Therapy of Pneumonia. By Frederick T. Lord, M.D., Clinical Professor of Medicine, Emeritus, Harvard Medical School; Elliott S. Robinson, M.D., Ph.D., Director, Division of Biologic Laboratories, Massachusetts Department of Public Health; and Roderick Heffron, M.D., Medical Associate, The Commonwealth Fund. Price, $1.00. Pp. 174. New York: The Commonwealth Fund, 1940.

This handbook gives clearly and concisely the diagnosis, prognosis, and treatment of all forms of pneumonia. The indications, advantages and disadvantages of both chemotherapy and serum treatment are discussed fairly and fully. This little volume can be highly recommended as coming up to the promise made on the cover: "It brings up to date the material on serum therapy, presents full information about the use of sulfapyridine, and gives in concise, usable form a rounded discussion of the specific drug and serum treatment of pneumonia due to various organisms."

This reviewer would like to disagree with only one statement in the book: "Other than oral administration of sulfapyridine is not practical, because of the very slight solubility of the drug." In the **Journal of the American Medical Association** for March 16 (page 941), Whittemore, Royster and Riedel record their experience with fourteen patients given sulfapyridine by rectum, all of whom recovered. Three times the oral dose was used, dissolved in 3 ounces of water with 10 to 15 grains of sodium bicarbonate. More than a year ago—within a month after sulfapyridine was made available—Dr. Vernon C. Lassiter, of Winston-Salem, used it by rectum successfully, and his example has been followed ever since by many of his colleagues.

Diagnosis by intuition is a rapid method of reaching a wrong conclusion.—The Papers and Speeches of John Chalmers DaCosta, Philadelphia, W. B. Saunders Co., 1931, p. 50.

The Summer-Time Use of Mead's Oleum Percomorphum

During the hot weather, when fat tolerance is lowest, many physicians have found it a successful practice to transfer cod liver oil patients to Mead's Oleum Percomorphum.

Due to its negligible oil content and its small dosage, this product does not upset the digestion, so that even the most sqeamish patient can "stomach" it without protest.

There are at least two facts that strongly indicate the reasonableness of the above suggestion: (1) In prematures, to whom cod liver oil cannot be given in sufficient dosage without serious digestive upset, Mead's Oleum Percomorphum is the antirachitic agent of choice. (2) In Florida, Arizona and New Mexico, where an unusually high percentage of sunshine prevails at all seasons, Mead's Oleum Percomorphum continues increasingly in demand, as physicians realize that sunshine alone does not always prevent or cure rickets.

Mead Johnson & Company, Evansville, Indiana, invite you to send for samples of Mead's Oleum Percomorphum for clinical use during the summer months to replace cod liver oil.

A Sanitarium for Rest under Medical Supervision, and Treatment of Nervous and Mental Diseases, Alcoholism and Drug Addiction.

The Pinebluff Sanitarium is situated in the sandhills of North Carolina in a 60-acre park of long leaf pines. It is located on U. S. Route 1, six miles south of Pinehurst and Southern Pines. This section is unexcelled for its healthful climate.

Ample facilities are afforded for recreational and occupational therapy, particularly out-of-doors.

Special stress is laid on psychotherapy. An effort is made to help the patient arrive at an understanding of his life problems; and by adjustment to his personality difficulties or modification of personality traits to effect a cure or improvement in the disease. Two resident physicians and a limited number of patients afford individual treatment in each case.

For further information write:

The Pinebluff Sanitarium, Pinebluff, N. C.

Malcolm D. Kemp, M.D. Medical Director

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NORTH CAROLINA MEDICAL JOURNAL

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VOL. 1 JULY, 1940 No. 7

IMPORTANCE OF BRONCHOSCOPY IN THE DIAGNOSIS OF INTRATHORACIC CONDITIONS

V. K. HART, M. D.

CHARLOTTE

Diagnostic bronchoscopy is a well established procedure. It was popularized in its early days by the numerous publications of the Philadelphia school of Jackson, Tucker and Clerf. They long ago emphasized the diagnostic and therapeutic value of direct inspection of the tracheobronchial tree and removal of secretion and abnormal tissue therefrom. In recent years, other workers, such as Vinson, have added much to the literature.

The time allotted does not permit an extensive review of this literature. Pertinent references will of course be made. The best contribution to the symposium here today can be made largely in the light of our own clinical experiences. Let us proceed then to such an analysis.

I am limited in the title assigned to the diagnostic value of bronchoscopy. Therapeutic values are closely related to the diagnosis and some consideration must, therefore, at times be given to therapy.

Diagnostic bronchoscopy has a place in each group of the following outline:

I. Bronchial obstruction with positive roentgenogram.

- (a) Obstructive atelectasis.
- (b) Obstructive emphysema.

II. Bronchial obstruction with negative roentgenogram but positive clinical findings.

III. Suppurative disease which has not responded to a few weeks of conservative management.

- (a) Various types of acute pneumonitis.
- (b) Abscess cavity.
- (c) Bronchiectasis.

IV. Pulmonary hemorrhage that is not obviously tuberculous.

V. Mediastinal pathology.

- (a) Obstructive dyspnea.
- (b) Differential diagnosis between parenchyma and mediastinum.

VI. Atypical cases.

Bronchial Obstruction With Positive X-Ray Findings

Jackson(1) for many years has called attention to obstructive atelectasis secondary to bronchial obstruction, especially to a foreign body. It is fundamental, then, that any bronchial obstruction may give atelectasis. Whether it is massive (complete) or partial depends on the degree of obstruction and whether it is in the main-stem bronchus or one of its subdivisions.

Thick viscid secretion frequently acts as such an obstructing mechanism. It usually complicates some acute process of the lower respiratory tract. Pneumococcus is cited as giving a particularly viscid secretion. A partial obstructive atelectasis complicating a pneumonia in a child has been observed. Coryllos and Birnbaum have stressed this phenomenon(2). The same mechanism has

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Presented before the Southern Tuberculosis Conference at Hot Springs, Arkansas, on October 1, 1936; and before the South Carolina Medical Society, Charleston, November 10, 1936.

From the Charlotte Eye, Ear, Nose and Throat Hospital. Pathology not otherwise specified, by Dr. L. C. Todd, Charlotte.

1. Jackson, Chevalier: Bronchoscopy and Esophagoscopy, Philadelphia, W. B. Saunders, 1927, pp. 169, 184, 316.
2. Coryllos, Pol. N., and Birnbaum, Geo. L.: Syndrome of Pneumococcic Bronchial Obstruction: Experimental Production of Atelectasis or Lobar Pneumonia with Human Pneumonic Sputum; Suggestion for Preventive and Therapeutic Treatment, Arch. Int. Med. 51:290 (Feb.) 1933.

been seen in an acute diffuse purulent bronchitis with a pure culture of a Gram-negative coccus of the catarrhalis group. Regardless of the type of infection, such viscid secretion is an occasional factor in postoperative collapse(3 4 5).

Any abnormal tissue in the bronchus can give an atelectasis. This may be granulation, specific or neoplastic tissue. The latter may be benign or malignant.

Atelectasis may also be due to extrabronchial compression. Our own experience with this type of case has been limited to a left complete atelectasis in a seven months old baby. Several bronchoscopies revealed nothing but bronchial compression. The baby eventually died. A post mortem examination was not obtainable, but the mother died two years later in the local tuberculosis sanatorium of an extensive pulmonary tuberculosis. The cause of the baby's death was, therefore, interpreted as compression by tuberculous peribronchial glands. A complete report of this case has been previously made(6).

Any obstructive atelectasis is an indication for bronchoscopy both from the diagnostic and therapeutic standpoint. The following case illustrates, not the typical massive, but the partial atelectasis. This type is most apt to be overlooked. Singer and Graham(7), and later Anspach(8), have emphasized in these cases the presence of basal triangular shadows obliterating the homolateral cardiac outline.

Case 1. *Obstruction of Left Lower Bronchus by Pyogenic Tissue with Partial Obstructive Atelectasis.* A boy sixteen years old was referred on April 23, 1936, because of recent pulmonary hemorrhage. This occurred one week prior to admission and necessitated a blood transfusion at another hospital. There was a history of severe colds with productive cough every winter. He had previously been examined at a tuberculosis sanatorium and sent home with a tentative diagnosis of bronchiectasis.

At the time of admission, he had an acute nasopharyngitis. The right antrum was somewhat dull, but only a small amount of pus was washed from it through the inferior meatus. There had been a previous clean tonsillectomy and adenoidectomy.

The roentgenogram showed a rather dense triangular left basal shadow with the left cardiophrenic angle largely obliterated. There was also some mottling of the upper right lung field.

At bronchoscopy, done under local anesthesia with a 6 mm. 'scope, the right main bronchus and its appendages were found to be normal. On the left side, a small amount of thick viscid secretion was encountered and aspirated. As the 'scope descended, free bleeding suddenly occurred, necessitating the instillation by syringe of 5 cc. of adrenalin, followed by cocaine and adrenalin sponges. When the bleeding was controlled, a mass was seen at about the level of the upper lobe bronchus. It was more or less pedunculated and it was successfully removed almost *in toto* with biopsy forceps. The base was then cauterized with 20 per cent silver nitrate.

Two days later, the basal area had largely cleared and a lipiodol instillation was negative for any bronchiectatic cavities.

The pathological report of the tissue removed is quoted: "Fibrin makes up most of the specimen showing large cystic air spaces and some pyogenic granulations with considerable necrotic tissue."

The bronchoscopic specimen of secretion was negative for tubercle bacilli.

The patient did well for two and one-half months and then returned with a history of recent productive cough and fever. Bronchoscopy was repeated and some pus aspirated from the left side (again negative for tubercle bacilli). There was no odor and it was not excessive. No abnormal tissue was seen, though the lower left bronchus was reddened.

The patient then became fever free again, and the cough practically stopped. The bleeding had ceased since his first admission.

This child died suddenly on January 21, 1937, following a bronchoscopy done six hours previously. Bleeding occurred before and during the bronchoscopy. It was apparently coming from an ulceration of the lower left bronchus, and was controlled with

---

3. Eliason, E. L. and McLaughlin, C. W., Jr.: Postoperative Pulmonary Atelectasis. The Surgical Clinics of North America. 14:1 (Feb.) 1934.
4. Tucker, G.: Bronchoscopic Observations on Obstructive Pulmonary Atelectasis. Arch. Otolaryng. 13:315 (March) 1931.
5. Hearn, Wm. P. and Clerf, Louis H.: Postoperative Massive Collapse of the Lung. Ann. Surg. 85:54 (Jan.) 1927.
6. Hart, V. K.: Pulmonary Pathology of Childhood. A Clinical Review from the Bronchoscopic Viewpoint. Tr. M. Soc. North Carolina, 161, 1935; Am. J. Dis. Child. 53:1544 (June) 1937.
7. Singer, J. J. and Graham, E. A.: Roentgen-Ray Study of Bronchiectasis. Am. J. Roentgenol. 15:54 (Jan.) 1926.
8. Anspach, W. E.: Atelectasis and Bronchiectasis in Children. Am. J. Dis. Child, 47:1011 (May) 1934.

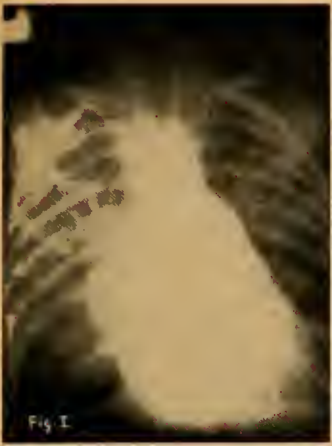

Fig. 1. Case 1. Left basal, triangular, atelectatic shadow. Cardiophrenic angle obliterated.

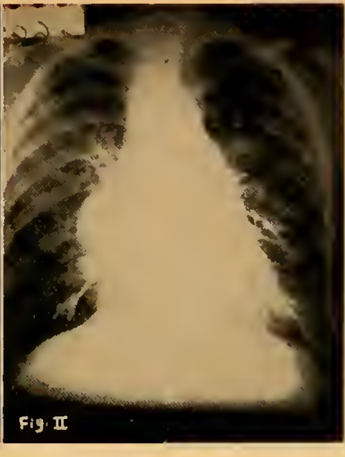

Fig. 2. Case 1. Lipiodol instillation 48 hours after removal of abnormal tissue from bronchus. This plate shows no bronchiectatic cavities, and marked clearing of the involved area.

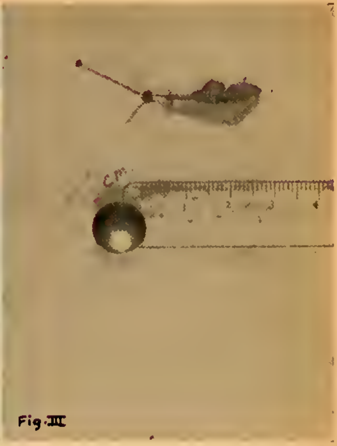

Fig. 3. Case 1. Mass removed from bronchus. Reported pathologically as pyogenic granulation tissue.

adrenalin and cocaine. No biopsy was attempted. Unfortunately no blood count was done at that time, but there were no clinical signs of extreme loss of blood. In retrospect it is felt that a blood transfusion should have been given, because the pulse mounted to 150 just prior to death. Although no autopsy was obtained, it is felt that this ulceration was probably of tuberculous origin. This is quite possible despite a previous negative tissue report.

Obstructive emphysema—trapping of air—is usually seen in connection with foreign bodies. Its presence, regardless of cause, is a positive indication for bronchoscopy.

An illustrative case is cited because: (1) It occurred in a tuberculous patient previously undiagnosed. (2) There is difficulty in distinguishing clinically between a spontaneous pneumothorax and the obstructive emphysema. (3) The obstructing mechanism was thick, viscid secretion.

Case 2. *Obstructive Emphysema in Tuberculous Patient Caused by Viscid Secretion.* The patient, a single white woman twenty-five years of age, was first seen on June 6, 1931, complaining of marked dyspnea and cyanosis. There was complete absence of breath sounds over the left chest. This absence, with concomitant tympany, raised the question of a spontaneous pneumothorax or a foreign body in the left main stem bronchus.

X-ray examination (taken on expiration) showed, much to our surprise, an obstructive emphysema. The heart was displaced to the right and the left diaphragm displaced downward. These findings, together with increased aeration of the left lung, indicated an obstructive emphysema on the left.

Immediate diagnostic bronchoscopy was done under local anesthesia using a 7 mm. 'scope. The right bronchial tree was normal. In the left main bronchus thick, viscid secretions in large amount were present and were aspirated by suction.

Following this bronchoscopic aspiration, the patient became entirely symptom-free. Ten days later she was readmitted with the same clinical picture—i.e., dyspnea, cyanosis, and absence of breath sounds over the left chest. Immediate bronchoscopy was done under local anesthesia. Again much secretion was aspirated. Near the carina of the upper lobe bronchus some granulation tissue was seen. Biopsy was done. A bronchoscopic specimen of sputum was taken in a specimen collector.

She again became free of her dyspnea and cyanosis. The tissue report of the biopsy was: "The specimen consists of necrotic tissue and hyalinized connective tissue. We found no tubercles or remains of tubercles."

However, the laboratory reported the sputum as definitely positive for tubercle bacilli. The patient has since been under treatment at the North Carolina Tuberculosis Sanatorium.

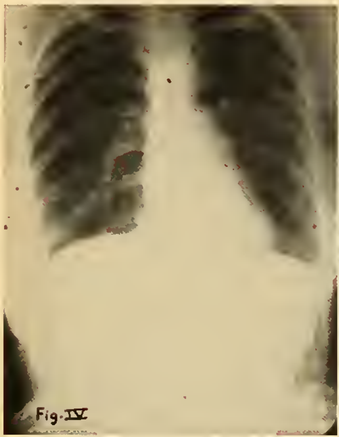

Fig. 4. Case 3. This photograph is reproduced because it is largely a negative film. Complaint was dyspnea in the prone position. Obstructing tissue in left bronchus was found and removed at bronchoscopy.

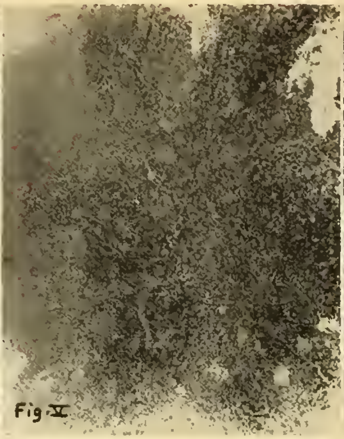

Fig. 5. Case 3. Microphotograph (low power field) of tuberculous granulation tissue removed at bronchoscopy. Extensive necrosis and ulceration are present.

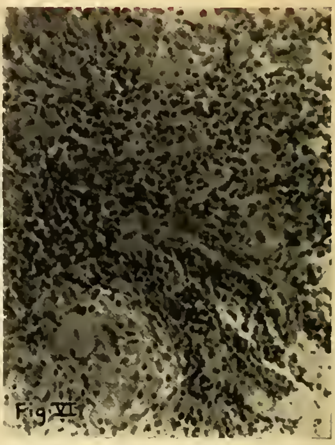

Fig. 6. Case 3. High power field of granulation tissue, showing tubercle detail at borders of necrotic tissue.

Bronchial Obstruction With Negative Roentgenogram But Positive Clinical Findings

It seems paradoxical that a bronchus may have an obstruction and yet give an essentially negative chest film. Though this phenomenon is somewhat unusual, it is well to emphasize that it does occur. The clinical findings may consist only of an auscultatory wheeze, or the symptoms may be purely subjective.

Case 3. *Bronchial Obstruction by Tuberculous Granulation Tissue With Negative X-Ray Findings.* This patient was a single white woman, aged twenty-three years. She was referred on July 26, 1934, by an internist for bronchoscopic examination because of dyspnea which occurred only in the prone position. Her chest film had given no evidence of pulmonary pathology, despite the fact that there was a past history of a positive sputum.

Her complaint was that she "wheezed" when she lay down. She thought it was worse when she lay on her left side. She stated that she was bringing up no thick pus, but that she did have a periodic cough regardless of position.

Bronchoscopy was done under local anesthesia. On the record made at that time it was stated that there was in the left main bronchus "a marked ulcerative bronchitis . . . . there were several tags of granulation tissue projecting into the bronchial lumen. Without much question these were obstructing the bronchus particularly in the prone position. They were removed, the area cauterized with 20 per cent silver nitrate, and 5 cc. mono-P-chlorophenol instilled."

Bronchoscopically aspirated specimens were positive for tubercle bacilli. The pathological report of tissue removed was "typical tuberculous granulation tissue."

The patient was relieved for two weeks, and then symptoms recurred. She was again treated by bronchoscopy. It was not necessary to remove tissue this time. The bronchus was again treated with silver nitrate.

This patient subsequently died in 1938 of widespread pulmonary tuberculosis.

Suppurative Disease

Let us first consider so-called unresolved pneumonia. It is apparently a real, clinical entity, and a type of acute pneumonitis.

In these cases there is usually persistent productive cough and fever following a pneumonia six or eight weeks previously. A secondary anemia is a common finding. The roentgenogram shows an area of density in some part of the lung.

In three or four cases seen in the last few years, the heart was essentially in normal position. Possibly this was true because they were of lobar distribution, rather than the

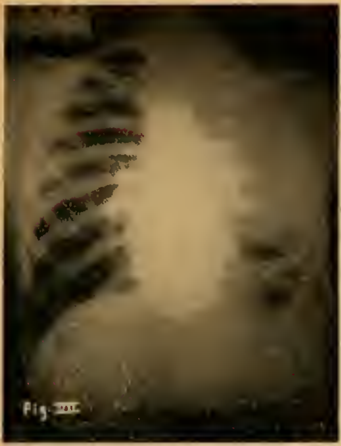

Fig. 7. Case 4. Chest film of 15 year old boy 2 months after pneumonia, showing dense opacity of left chest from first to sixth ribs anteriorly and no cardiac displacement.

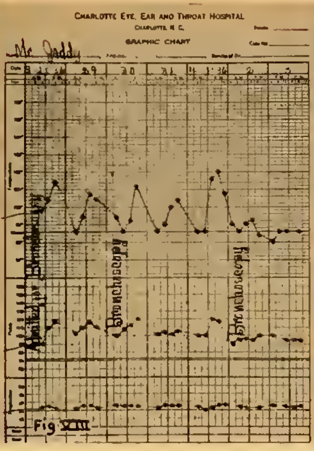

Fig. 8. Case 4. Temperature chart showing response to bronchoscopic aspiration of viscid pus. This case probably represents a type of partial obstructive atelectasis.

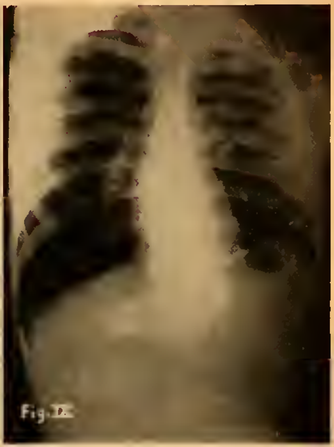

Fig. 9. Case 4. Chest film showing recovery following bronchoscopy.

massive type. In the former, there may be little or no displacement. (The x-ray technique makes some difference, whether the picture is taken on expiration or inspiration.) Indeed, they probably represent, clinically, a type of atelectasis with a secondary pneumonitis. This conception coincides with their prompt response to bronchoscopic aspiration of retained viscid pus. Such cases should have bronchoscopy not only for the therapeutic value, but to rule out other conditions by direct visualization.

It should be interpolated that these cases had all had negative pleural taps, despite the fact that one case had an actual displacement of the heart to the opposite side suggesting pleural pathology. After the lung had been cleared by bronchoscopy, a small, high pocket in the pleural cavity could be made out anterior to the scapula. This was cleared with one syringe aspiration by the consulting surgeon.

Case 4. *Unresolved Pneumonia.* A white boy aged fifteen years was referred to us on March 28, 1935, because of persistent productive cough and fever. Two months previously he had had what was apparently a pneumonia. The fever and cough persisted, however, longer than the usual duration of a pneumonia and he was sent in by the State Tuberculosis Sanatorium for bronchoscopic study.

The chest film showed a more or less homogeneous, dense opacity occupying the upper left chest from the first to the sixth ribs anteriorly. This was interpreted as a residual pneumonitis of the upper left lobe, as there was no cardiac displacement.

Bronchoscopy was advised and was done under local anesthesia using a 6 mm. 'scope. The right side was found to be normal. The left main bronchus was reddened, and a small amount of sticky pus was seen spouting from the upper lobe bronchus when the patient coughed. There was no odor. A specimen was collected (which showed no tubercle bacilli, only coccus forms), suction was done and 5 cc. mono-P-chlorophenol instilled.

The chest cleared up entirely following three bronchoscopic aspirations. The patient became afebrile, the cough stopped, and he has remained well to date.

An acute pneumonitis may complicate the convalescence of an acute respiratory infection. It frequently follows tonsillectomy or dental extraction usually done under general anesthesia. It is not pertinent here to discuss the aspiration and embolic theories.

We are concerned largely with diagnosis. Therefore, any acute pneumonitis which has not responded to several weeks of bed rest, high caloric feedings, postural drainage, and small transfusions under the direction of the internist, probably should have bronchoscopic study. As a corollary, it follows that subsequent bronchoscopic treatment may be indicated, depending on the primary bronchoscopic findings.

These cases are quite common, no doubt, in the practice of specialists in diseases of the chest. Consequently, it will be more profitable if some of the less common causes of suppuration are discussed.

It should be emphasized that any bronchial obstruction may give a secondary pneumonitis. This obstruction may be a benign or malignant neoplasm. The predominating clinical picture, however, will be that of an acute pulmonary infection. This has been stressed by Vinson(9).

One most interesting case of an apparent adenoma of the bronchus came under observation in 1934. It is not cited in detail here because we hope to make a complete report later. Brief comment, however, is pertinent.

The patient was 47 years old and was referred because of an acute pneumonitis of the right upper lobe. A mass was found at bronchoscopy obstructing the right upper lobe bronchus. This was largely removed with biopsy forceps, and the base was cauterized with 20 per cent silver nitrate. The pathologist returned the diagnosis of adenocarcinoma of a high degree of malignancy. The family was given the prognosis and decided not even to have deep x-ray therapy given.

Eight months later a follow-up examination was made. Her chest film showed the right upper lobe had entirely cleared since the bronchus was unlocked and the film was otherwise entirely negative. She had gained 30 pounds in weight. Bronchoscopy showed nothing of any consequence.

In going back over her sections, we now feel that this was an adenoma of a benign type. It has been five and one-half years since the original illness and the patient has remained well. Kramer and Som(10) have made some interesting observations on these cases.

Another case illustrates the importance of bronchoscopic examination in persistent pulmonary suppuration.

Case 5. *Malignancy of the Right Main and Right Upper Lobe Bronchi With Secondary Suppuration of the Right Upper Lobe.* The patient was a white male, aged sixty years. The chief complaint was productive cough which was attributed to a recent influenza. Nothing was found in the nasal sinuses, and the patient was treated in the office by instilling warm mono-P-chlorophenol into the trachea with a syringe. A week later he returned with a history of fever and vomiting. An x-ray at this time showed a marked increase in density of the right upper lobe. Hospitalization was advised. Blood studies showed a negative Wassermann, a mild secondary anemia and a leukocyte count of 19,400.

Bronchoscopy was then done under local anesthesia. A 7 mm. 'scope was passed. The left main bronchus and its divisions were normal. In the right main bronchus, papillomatous tissue was seen about the upper lobe orifice along the superior wall. There was also abnormal tissue involving the posterior and inferior surfaces of the upper lobe bronchus. Several pieces of tissue were taken for microscopic examination.

The pathological report was bronchogenic carcinoma. Deep x-ray therapy was advised and given. The patient then improved so far as his infection was concerned, but died eleven months later at his home of carcinomatosis.

Another cause of a localized inflammatory lesion of the lung is the direct extension of an amebic liver infection through the diaphragm. This should always be suspected in any right-sided lesion with an elevation of the right diaphragm. Bronchoscopy can be of definite help diagnostically by excluding other conditions, and by obtaining the characteristic odorless salmon colored pus.

In one such case, the diagnosis was almost overlooked because the pus was coming from the middle lobe bronchus. It suddenly occurred to me that the middle lobe does come into direct contact with the diaphragm anteriorly. Amebae were then searched for in the sputum and found.

The sputum of another patient was scanty and bloody, but did not show amebae. A biopsy from an inflamed right lower lobe bronchus did show a leukocytic infiltrate with areas of necrosis.

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9. Vinson, Porter P.: The Necessity for Bronchoscopic Examination in Distinguishing Primary Carcinoma of the Bronchus from Suppurative Disease of the Lungs, Surg., Gyn. and Obstet., 54:105 (Jan.) 1932.

10. Kramer, R., and Som, Max L.: Further Study of Adenoma of the Bronchus, Ann. of Otol., Rhin. and Laryng. 44:861 (Sept.) 1935.

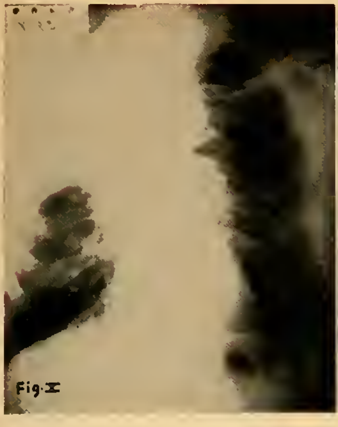

Fig. 10. Case 5. Roentgenogram showing extensive involvement of right upper lobe, secondary to bronchogenic carcinoma.

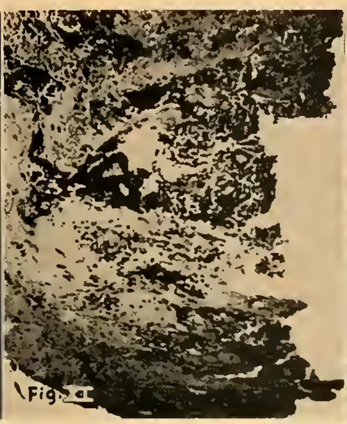

Fig. 11. Case 5. Miscrophotograph of bronchoscopic biopsy specimen, bronchogenic carcinoma.

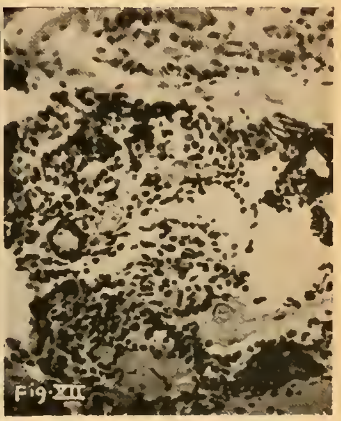

Fig. 12. Case 5. High power field of biopsy specimen.

The chest films of all patients exhibited either an abnormal contour or elevation of the right diaphragm, or both. All recovered following the administration of emetine given under the direction of the referring physician or medical consultant.

Any pneumonitis may go on to frank abscess formation. Jackson(11) has pointed out that the preliminary pneumonitis may be of short duration.

Bronchoscopy in such cases has the same value as in any pneumonitis—viz., direct visualization and the bacteriologic study of uncontaminated specimens. Such study should in particular rule out fusospirochetal infections.

It is not irrelevant to point out that therapeutically bronchoscopy may bring about a successful outcome even in a chronic abscess of some months' duration. One post-pneumonic abscess with a rather large cavity in the left upper lobe cleared up entirely under bronchoscopic management, although the patient did not come under observation until ten months after onset, and the fingers were already clubbed(6). Should such a case go to operation, the bronchoscopist can be of great help in determining the exact lobe of involvement. Lastly, even in a bronchoscopic failure, the preliminary bronchoscopic treatment will often make the patient a much better surgical risk.

Before leaving suppurative diseases, brief mention should be made of bronchiectasis. A certain percentage of bilateral bronchiectatic cases are apparently secondary to suppurative sinus disease(12 13 14 15). This discussion is concerned chiefly with the unilateral case. In these a possible bronchial obstruction by a neglected foreign body or abnormal tissue must be considered. Clerf has previously emphasized this(16).

One patient with unilateral bronchiectasis, proven by lung mapping, was found at bronchoscopy to have a bronchus obstructed by abnormal tissue. Bronchoscopic biopsy showed squamous cell carcinoma. This is the only patient in whom I have seen a rather dramatic result from phrenicectomy. His sputum, which was copious and foul, ceased, and he became afebrile after the operation. Though he received deep x-ray therapy, he died two years later of carcinomatosis.

The experience of this clinic has confirmed that of other writers in regard to neglected foreign bodies(17 18). A multiple bronchiec-

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15. Quinn, Lester H. and Meyer, Ovid V.: The Relationship of Sinusitis and Bronchiectasis, Arch. Otolaryng. 10:152 (Aug.) 1929.

16. Clerf, Louis H.: Bronchiectasis Associated with Disease of the Nasal Accessory Sinuses. Etiology and Bronchoscopic Treatment, Arch. Otolaryng. 6:28 (July) 1927.

17. Jackson, Chevalier: Bronchoscopy and Esophagoscopy, Philadelphia, W. B. Saunders Co., 1927, pp. 169, 170, 176, 227.

18. Manges, F. D.: Pathologic Changes in Lung Tissue as the Result of Foreign Bodies of Long Sojourn, J. A. M. A. 87:987 (Sept. 25) 1926.

tasis frequently ensues even after a relatively short sojourn. A vegetable foreign body may have undergone liquefaction by the time bronchoscopy is done. This does not lessen the indication for endoscopic study. Other conditions must be eliminated and any residual foreign body removed before intelligent treatment can be undertaken. Indeed, I think it is generally agreed among bronchoscopists that any case of bronchiectasis, whether unilateral or bilateral, should have at least preliminary bronchoscopic study. Emphasis has been laid on the unilateral case, because intrinsic bronchial pathology is most apt to be a factor.

Pulmonary Hemorrhage

It may be set down as fundamental that any patient bleeding from the lung, if the the explanation is not obvious by x-ray and clinical study, should have bronchoscopic study. It has been shown that suppuration secondary to bronchial neoplasm may dominate the clinical picture. On the other hand, bleeding may be the single symptom of which the patient complains. We should not be misled by the age of the patient. One of our patients with a carcinoma of the right bronchus was only twenty-three years old. Crowell(19) reports one in a patient of the same age, and Gould(20) one in a boy aged ten years.

Case 6. *Peribronchial Carcinoma With Hemorrhage as the Chief Complaint.* This case is reviewed because it illustrates what is apparently the less common type of malignancy, and because one is very apt to get a negative biopsy except in the late stages when ulceration into the bronchus has occurred.

The patient was a white female, aged seventy-three years. She was referred for bronchoscopy on February 16, 1933, because of a recent small pulmonary hemorrhage.

Bronchoscopy was done under local anesthesia using a 7 mm. 'scope. The findings recorded at that time are quoted: "Larynx and trachea normal. Right bronchus: upper, middle, and lower lobe orifices normal. No pus. Left bronchus: marked fixation: upper and lower lobe orifices obscured from view by fixed and narrowed lumen. Biopsy done. Endoscopic diagnosis: Probably peribronchial carcinoma."

The chest film showed a definite and sharply circumscribed area of increased density in juxtaposition to the left lower bronchus. It was interpreted as strongly suggestive of new growth.

The pathologist reported that in the tissue removed, there was no evidence of malignancy or specific granuloma. The subsequent course, however, proved the diagnosis was probably correct. A letter from the family physician stated that the patient had died about a year after examination in much pain and with a badly swollen right arm. It was assumed that the latter was likely due to carcinomatous interference with the blood supply. The original bleeding probably followed the erosion of a small vessel by the growth.

Bronchoscopy may also be of value in hemoptysis complicating bilateral bronchiectasis. If this persists or frequently recurs, it is sometimes desirable to know from which side the bleeding comes. Therefore, it is best to use the bronchoscope during the bleeding. In one such patient, the bleeding was determined by bronchoscopy to be coming from the left side, and was effectively controlled by a left phrenicectomy done by the consulting surgeon.

Occasionally bleeding from the lung can not be explained by x-ray and clinical study. In such a case, endoscopy is of value in ruling out other conditions and in determining indisputably that the origin is from the lung.

Mediastinal Pathology

Bronchoscopy in these cases is of value because: (1) Tracheal or bronchial compression or rigidity may be demonstrated. (2) Endobronchial pathology or suppuration of the parenchyma can be excluded. (3) If either or both of these latter conditions are found, direct study is permitted.

Pulmonary suppuration may occur secondary to direct extension of mediastinal tuberculosis. We have had under bronchoscopic observation for five years one girl with this condition. Thanks to Dr. P. P. McCain of the North Carolina Tuberculosis Association, we have an x-ray record extending back ten years. This case has previously been reported in detail(6).

Hodgkin's disease may also invade the

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19. Crowell, L. A.: Primary Carcinoma of the Lung in Twenty Three Year Old Man, J. A. M. A. 102:927 (March 24) 1934.

20. Gould, Lyman K.: Primary Carcinoma of Lung with Report of a Case in a Boy Aged Ten, J. Indiana M. A. 27:332 (Aug.) 1934.

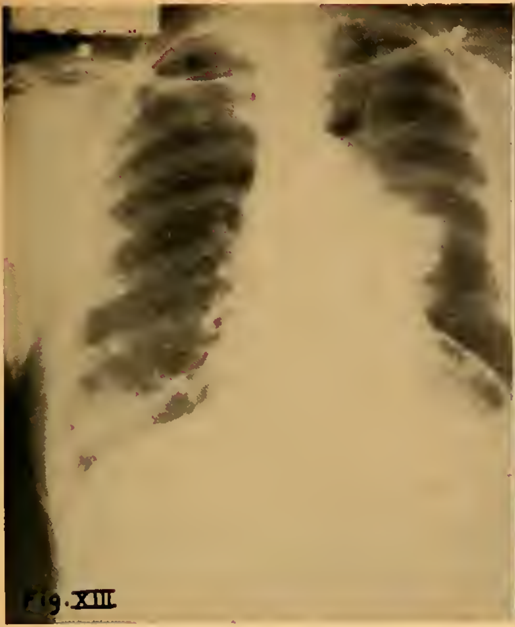

Fig. 13. Case 6. Chest film showing dense opacity in juxtaposition to left lower bronchus.

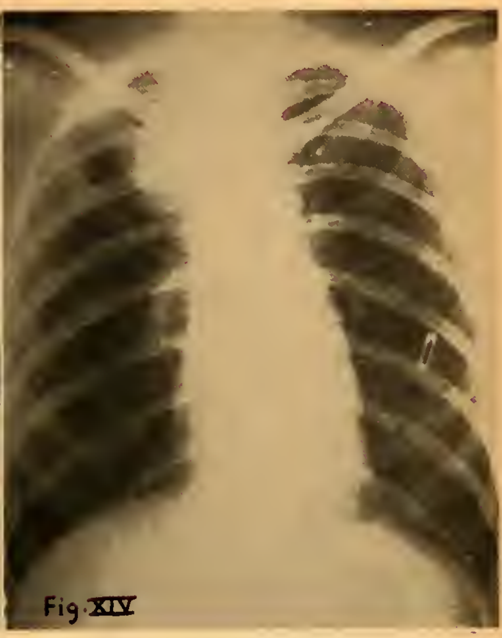

Fig. 14. Case 7. Chest film of patient with Hodgkin's disease.

lung by direct extension. A case is presented which was proven by autopsy.

Case 7. *Hodgkin's Disease With Tracheal Compression and Secondary Invasion of Right Upper Lobe.* A white female, aged thirty-five years, was seen in consultation with an internist on August 1, 1929, because of unexplained dyspnea. Extensive laboratory data and x-ray study had failed to give a satisfactory explanation. She was most comfortable in the semi-recumbent position.

In this position, a 7 mm. bronchoscope was passed. Very marked compression was encountered in the lower third of the trachea. The compression was anterior and apparently more to the right. A suction tube could be forced passed the obstruction, but not the bronchoscope.

A bronchscopic diagnosis was made of mediastinal mass, probably Hodgkin's disease or lymphosarcoma. Shortly thereafter a gland appeared above the clavicle. This was removed and sent to the pathologist, who returned a diagnosis of Hodgkin's disease.

This patient came to autopsy three years later. There was an infiltrative and inflammatory lesion involving not only the peritracheal and peribronchial glands, but the right upper lobe of the lung. Microscopic studies confirmed the diagnosis of Hodgkin's disease of an infiltrative type.

A mediastinal mass may be demonstrated both bronchoscopically and by x-ray and still leave the diagnosis uncertain. However, with the help of the internist, tuberculosis can usually be excluded. Then the diagnosis lies between Hodgkin's disease and malignancy. Deep x-ray therapy is indicated in either instance.

Lastly, permit me to point out that aneurysm may arise from the mediastinal aorta with tracheal compression, and even with negative x-ray findings. Dyspnea then occurs.

On such a patient, I made the fatal mistake of doing a bronchoscopic biopsy with subsequent immediate death by hemorrhage. I hope to report this case with autopsy findings at some other time.

Atypical Cases

Time permits only brief comment. Occasionally, a film is seen which falls into no certain classification. Moreover, clinical and laboratory studies may still leave the diag-

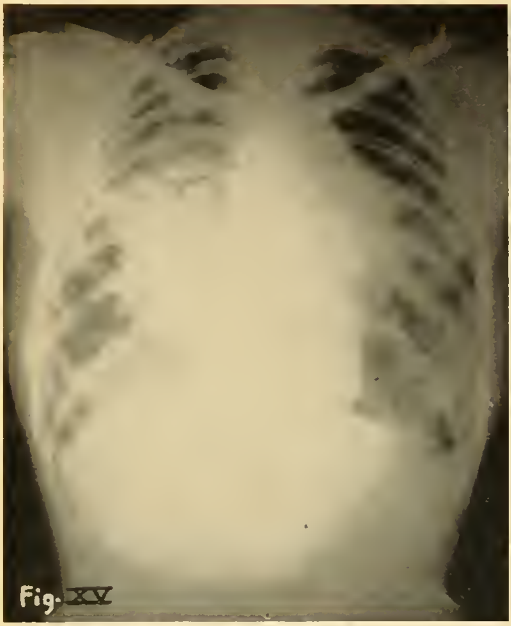

Fig. 15. Case 8. Atypical roentgenogram. Bronchoscopic biopsy showed tuberculosis.

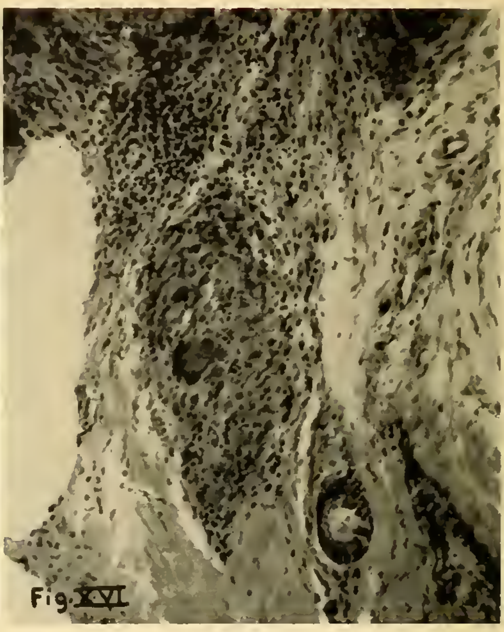

Fig. 16. Case 8. Bronchoscopic biopsy specimen, medium magnification, showing tubercles.

nosis doubtful. In these cases bronchoscopy is often of great help in diagnosis. An illustrative case is given.

Case 8. *Atypical Tuberculosis.* The patient, a white woman forty-two years of age, was referred on August 22, 1936, for bronchoscopic examination. The x-ray findings were rather bizarre, and the clinical and laboratory data inconclusive.

The following note was made at that time as to her chest films: "They show a dense left hilar shadow with marked accentuation of the upper left peribronchial structures. On the right side in juxtaposition to hilus is another dense area. On both sides these areas give the impression of considerable fibrosis as shown by peaking of right diaphragm."

Her chief complaint was shortness of breath and marked fatigue. There had been no bleeding, and only a slight cough, which was essentially non-productive. She stated she had not been well in four or five years.

Bronchoscopy was undertaken under local anesthesia. A 7 mm. 'scope was passed. The findings are quoted: "Nothing unusual in trachea except a slight deviation to the right. The right main bronchus was entered. Upper lobe bronchus normal. Just below same the bronchial wall was reddened and somewhat narrowed by an angry looking mucous membrane. The carina of the middle lobe bronchus appeared to have small superficial ulcerations. The lower lobe divisions appeared swollen. The left main bronchus was next entered. There was a sense of rigidity and fixation suggesting peribronchial pathology. Upper lobe bronchus normal. Opposite same and partially hiding lower lobe divisions was reddened swollen tissue. Again no pus. Biopsy specimens were taken from both sides. Endoscopic diagnosis: The long history and bilateral pathology argue for a chronic infection. Of course, malignancy must be considered. Might be specific, either tubercular or luetic."

The pathological report by Dr. W. M. Summerville on the tissue removed was that one of the specimens showed tubercles. In this connection it is interesting to note that no sputum at all was obtainable at bronchoscopy for examination.

One case of probable syphilis of the lung with very unusual x-ray findings has been observed by us. A bronchoscopic biopsy was done which aided in the diagnosis. The case, with a review of the literature, has been previously reported(21).

Summary

The etiology of obstructive atelectasis and emphysema can be and should be determined by bronchoscopy. Likewise, bronchoscopy is indicated with any clinical evidence of bronchial obstruction despite a negative roentgenogram.

Any lung suppuration which has defied conservative management should have bronchoscopic investigation. In particular, it was emphasized that bronchial neoplasm may be the predisposing factor.

Bronchoscopy may be of localizing surgical value in: (1) Lung abscess. The bronchoscopist may be of help in determining the exact lobar site. (2) Bilateral bronchiectasis with persistent or recurring hemorrhage. The side for phrenicectomy or pneumothorax can be determined.

Unilateral bronchiectasis should always suggest a possible bronchial obstruction. Consequently, the bronchoscopist should be called on to rule out a neoplasm or neglected foreign body.

It was also pointed out that any pulmonary hemorrhage not obviously tuberculous merits bronchoscopic study. Occasionally, a neoplasm may thus first manifest itself.

Bronchoscopy may also, at times, give helpful information in three other conditions: (1) obstructive dyspnea, (2) uncertain mediastinal pathology, (3) any chest film in which the findings are bizarre.

Illustrative case reports were presented.

21. Hart, V. K. and Gibbon, J. W.: Syphilis of the Lung. Report of a Case with Bronchoscopic Study, South. Med. and Surg. 96:404 (Aug.) 1934.

Ethics.—Ethics and the art of medicine are interdependent aspects. This is not the place to discuss medical ethics. Suffice it to state that a good physician has the same qualifications as an ideal man in his relation to his fellow men. Such a physician need not match his conduct, letter by letter, to the codes and paragraphs of the rules of ethics of medical associations. It is said that a minister once defined a gentleman as "one who has more regard for the rights of others than for his own feelings and for the feelings of others than for his own rights." This is an ideal definition of medical ethics to strive for.—Soma Weiss, M.D.: The Medical Student Before and After Graduation, J. A. M. A. 114:1717 (April 27) 1940,

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SYMPOSIUM ON THE EARLY SIGNS AND SYMPTOMS OF CANCER

CANCER OF THE ESOPHAGUS

B. E. RHUDY, M. D.

GREENSBORO

There are only two methods of diagnosing cancer of the esophagus:

1. Looking through the esophagus with the roentgen ray.

2. Looking into the esophagus with the esophagoscope.

All other methods are inconclusive and are apt to be misleading. A bougie should never be used; a cancer of the esophagus is well advanced before attaining a size sufficient to stop a bougie.

Granting that an early diagnosis can be made only by x-ray examination, or by esophagoscopic examination, or by both, what are some of the most important symptoms which would indicate that the examination should be done?

The most important early symptoms are not mentioned in text books; they are described by the patient in such vague and varying terms that it is difficult to formulate them.

Dr. Chevalier Jackson has stated that in most instances the early symptoms have not been connected by the patient directly with the later trouble and are recalled only after close questioning. Such symptoms as the following have been described.

1. Slight, queer feeling in swallowing.
2. A feeling of nervousnes about starting to swallow.
3. Vague sensation about the neck.
4. A feeling of cramp around neck.
5. Food sticking in throat while eating in a hurry.
6. A feeling of a lump rising in the throat. This occurs in many cases. At times it is experienced when the patient is not eating.

Early symptoms can be obtained by questioning the patient closely. Not infrequent-

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Presented before the Eighth District Medical Society, Greensboro, April 11.

ly the patient may make the statement that his physician had said the trouble was "just nervousness", or a "globus hystericus".

In conclusion it seems important to emphasize the following points:

1. The cure depends upon early diagnosis.
2. A carefully obtained history, with proper evaluation of seemingly insignificant incidents, leads to an early diagnosis.
3. A diagnosis of spasmodic stenosis of the esophagus and cardiaspasm — which are indeed rare in my experience—should never be made until cancer of the esophagus has been excluded.
4. Every patient with abnormal sensation in swallowing, even though it may be very slight, should be promptly examined by an experienced roentgenologist.
5. Esophagoscopy competently performed is the means of making a diagnosis early and persuading a comparatively well patient to undergo treatment at a stage when there will be some hope of curing the disease.

The method I use for examining these esophagus cases is that which was advocated by the late Dr. Manges several years ago, and is as follows:

With the patient placed in the prone position, right oblique posture, the lower end of the esophagus is turned slightly upward a little to the left, so that it becomes the highest point. The patient, drinking through a tube, fills the upper portion, and by means of the swallowing effect, plus peristalsis of the esophagus, forces the barium solution past the stricture or through the stricture area. The solution remains in the lower portion of the esophagus long enough for one to study the outline of the filled lumen and the extent of the involvement of the wall of the esophagus, and for satisfactory films to be obtained.

The fact that cancer of the esophagus does not metastasize early, and that it is practically never cured by surgical means should inspire us to make an early diagnosis and to try hard for a cure by irradiation.

CANCER OF THE STOMACH

A. de T. Valk, M. D.

Winston-Salem

Unfortunately the early signs and symptoms of cancer of the stomach are usually conspicuous by their absence, so that the average patient presenting himself for diagnosis has frequently reached the advanced stage in which surgical intervention is of little avail. This is a rather pessimistic statement, but it should increase our efforts to recognize and operate upon these patients as early as possible. We certainly have no right to be proud of the fact that almost 75 per cent of gastric cancers are hopelessly inoperable when the diagnosis is made.

Just what percentage of cancers of the stomach have their origin in an ulcer is speculative, but every gastric ulcer should be considered as a potential cancer, if our results are to be improved as time goes on. The chances for an operative cure are definitely lost in the majority of cases if the lesion has progressed to the point where the diagnosis of a gastric cancer is clearly evident.

Most gastric carcinomas are encountered after the age of fifty, though 10 per cent are found in patients under forty years of age. Seventy-five per cent occur in males.

Symptoms in these cases vary according to the stage of the disease, beginning most commonly with mild digestive disturbance —so mild, in fact, that the patient does not seek medical advice. The location of the lesion unquestionably has a direct bearing on the character of symptoms, as well as on their time of manifestation.

As the condition progresses there is a gradual intensification of symptoms. Pain is variable, as are nausea and vomiting, for the location of the growth has a definite effect. In the pyloric region obstructive symptoms may develop in a fairly early lesion, while in a more silent area the condition will be far advanced before causing much distress. The picture of the more advanced cases, with loss of appetite and weight, the subsequent anemia and asthenia, is only too familiar to us.

When patients present themselves, complaining of gastric distress, it is quite essential to eliminate all possibilities of extra-gastric lesions, organic or functional, thus narrowing the possibilities to ulcer or cancer. Gastric analysis and a complete blood count with careful study of the blood picture should be made, as well as urine and stool examinations. I would emphasize the latter, as blood in the stool may be found long before any marked gastric symptoms are present. Massive hemorrhage is variable and is more often seen in gastric ulcer than in carcinoma; however, in the more advanced cancers, hemorrhage may be fatal.

Most authorities believe that chronic ulcers within one inch of the pyloric ring have more than a 50 per cent chance of being malignant. While we consider all gastric ulcers as potential cancers, one hesitates to go on record as advocating immediate surgery in all cases presenting symptoms of a gastric lesion and showing constant filling defects. Unquestionably many of these lesions heal under medical treatment. Just how far medical treatment should be carried in such cases is a question.

The surgical treatment of gastric cancer is directly dependent upon the extent of the growth as revealed at operation. A resection should be done when possible, or a palliative gastro-enterostomy if obstruction exists and excision of the growth is contraindicated by virtue of extensive metastasis.

If we are to recognize and cure cancer of the stomach in its early stages, it is essential that we must become more cancer-conscious. Certainly, at present, we cannot be proud of our achievements.

The x-ray, in the hands of a competent man, is our most helpful instrument of precision in making an early diagnosis of gastric carcinoma, but in the very early stage no roentgenologist will venture a positive differentiation between a benign ulcer and a malignant lesion. There is no infallible means of differentiation other than microscopic examination and serial sections should be made before a positive conclusion is reached.

If, after three or four weeks of medical treatment, there is a definite lessening of spasm and niche, conservative treatment may be continued, but if there is no change in the general aspect, surgical intervention is indicated. This is the only means of giving these patients a reasonable chance of cure.

In view of the fact that many of the very early carcinomas of the stomach are so silent that the patient is not disturbed sufficiently to seek medical advice, it is a difficult problem to know what type of educational program might be advocated that will bring this condition to light before the hopeless stage is reached. Probably it would not be unwise to advocate that every man or woman reaching the age of forty-five should at least have a yearly "check-up" by a competent radiologist, particularly if there is any persistent loss of appetite, weakness or anemia. This pertains not only to the cancer of the stomach but to lesions of other portions of the gastro-intestinal tract.

We do not hesitate to pay premiums on life insurance with no benefit to the insured; why not a small premium to safeguard our living?

CANCER OF THE BOWEL AND RECTUM

H. L. Brockmann, M. D.

High Point

Any serious consideration of the early signs and symptoms of cancer of the bowel, including the rectum, must take account of the following facts:

1. These early signs and symptoms are so slight that even a doctor may himself have a cancer of the bowel and fail to recognize it until it has advanced considerably. This is true because these evidences are very easily confused with common and trivial disorders of bowel function and with organic changes which may be much less important than cancer.

2. Cancer of the colon is almost always cured when removed early. As matters now stand, nine out of ten patients admitted to the leading surgical clinics in America have allowed the disease to progress to the point of presenting unmistakable evidence. Even so, statistics show about 55 per cent five-year recoveries after operative removal. The percentage of cure is higher for cancers of the colon than of the rectum. The high percentage of cures is due to the fact that cancers of the colon are slow to metastasize. At operation, even when enlarged lymph nodes are found, these frequently prove to

be enlarged from inflammation secondary to ulceration of the malignant growth. Autopsies show that in about fifty per cent of patients dying of malignancy of the colon, the disease remains local—death being due to obstruction, perforation or peritonitis.

3. Anemia and loss of weight are more indicative of cancer located on the right side of the colon, whereas signs of obstruction indicate that the growth more likely is on the left side. This is because the contents of the colon are thin and more fluid on the right side. Absorption of liquid makes them thicker by the time they reach the left side, and they pass through a constriction with difficulty. The majority of growths have a tendency to encircle the lumen of the bowel and cause obstruction. Ulceration is also likely to occur, early in the course of the disease.

4. Only 2 per cent of malignant lesions of the bowel occur in the small intestine. I shall not discuss these in this paper.

5. The incidence of cancer is greatest after the fortieth year: 80 to 90 per cent. Most of the other cases occur in the thirties; a few earlier.

6. The layman is likely to think his trouble is merely piles. He may go untreated or seek the help of some unethical or irregular practitioner.

The following diagnostic features enable us to detect carcinoma of the bowel early in its development, when it is more readily amenable to cure.

Disturbance of digestion, in persons previously enjoying good digestion should suggest the possibility of colon carcinoma. We must be cancer minded. The disturbances more common as relatively early signs of colon cancers are:

Occurrence of diarrhea or constipation in persons who have previously had regular bowel habits. In other words, a permanent change in bowel habits.

Borborygmi

Meteorism

Cramps and colic

Vague discomforts which may be called "intestinal indigestion".

This group of symptoms is due to change in motor activity of the bowel, due to interference with the passage of the bowel contents. Hence these symptoms vary in extent and time of occurrence with the location and type of growth. Where the lumen is of large calibre and the growth small or polypoid, there will be little disturbance. Where the growth is encircling, the calibre small, or the intestinal contents hard, symptoms occur early. Sometimes obstruction occurs rather suddenly. Only occasionally does constipation alternate with diarrhea.

Ulceration, which occurs in all bowel cancers, and in most cases very early, causes another group of symptoms: bleeding from the bowel, which may be detected grossly, microscopically, or by chemical test on a meat free diet; anemia; infection through the ulceration surface to the bowel wall and adjacent lymph nodes—this playing a part in loss of weight, anemia and fatigue; secretory changes from irritation, resulting in overproduction of mucus, which is seen in the stool often mixed with blood. There is an exception to this in the scirrhous type of growth, in which ulceration does not occur until late. But adenocarcinoma constitutes the overwhelming majority of colon malignancies.

Pain is not a prominent symptom in this disease, and may be altogether absent until very late. When present it is usually below the navel and somewhat difficult to locate. The sensations are to be classed more as discomfort than as pain, and may be described as gas consciousness and soreness.

The health of persons developing cancer of the bowel does not deteriorate to a noticeable or demonstrable degree until late in the disease. My effort here is to help in identifying carcinoma of the colon and rectum before the occurrence of late symptoms, such as intestinal obstruction, palpable mass, metastasis, carcinomatosis, perforation, anemia, loss of weight, and cachexia. While remembering that even with these late symptoms life may be saved frequently by prompt and proper action, let us observe the following rules in order to detect carcinoma early:

1. Demand a complete study, including history and physical examination, when there is a change in the bowel habit, varying greatly in different cases but apt to be persistent, or recurring and increasing, associated with some form of "intestinal indigestion" and frequently associated with blood and mucus in the stools.

2. Keep cancer of the bowel constantly in mind when taking histories and making

physical examinations; not failing to make digital rectal examinations as a routine procedure on patients above thirty years of age.

3. Remember that the early warning symptoms may be temporarily relieved by symptomatic treatment, and don't dismiss cancer as a possible cause when this improvement takes place.

4. Include in the diagnostic measures, whether convenient or not:

(a) Visual and digital examination of the rectum, remembering that nine tenths of all cancers of the rectum, and therefore nearly one half of all cancers of the bowel, are within reach of the examining finger and can be diagnosed by careful palpation.

(b) Use of the proctoscope and sigmoidoscope, modern types of which are easy to use and permit inspection of an added four to six inches of the lower bowel. If a lesion is found, make a biopsy of it.

(c) An x-ray examination of the colon. A barium enema, followed fluoroscopically, checked with plates and the contrast method of air insufflations, offers the most valuable diagnostic measure of cancer of the colon beyond reach of the finger and sigmoidoscope. It is not usually necessary to give a barium meal by mouth, and this should not be done if there is a danger of obstruction. If the findings are questionable after the first x-ray examination, it should by all means be repeated after a few days.

(d) It is hardly necessary to mention stool and routine blood examinations, including a serological test for syphilis. Bear in mind that syphilis and cancer do occur in the same patient sometimes.

Conclusion

Treatment of cancer of the bowel is surgical. Radiation is seldom advisable or helpful. Cancer of the bowel is curable, yet many cases never get a chance at cure, because of late diagnosis. Get them early and keep your patient alive. Encourage laymen to consult a regular physician at the first appearance of symptoms. Encourage annual or semi-annual health examinations of apparently healthy people.

One of the needs for the control of tuberculosis today is for greater emphasis on the extent of the disease and less on its declining death rate. Rice, John L., M.D., N. Y. City Dept. of Health.

CANCER OF THE BLADDER

C. O. DELANEY, M. D.

WINSTON-SALEM

Cancer of the bladder is not unlike cancer in other parts of the human organism, except that it is in a site which is more accessible for investigation, and gives rise to symptoms which make possible its recognition earlier than is the case with cancer of other viscera. It is, therefore, reasonable to assume that it should be recognized and treated earlier, and that treatment should be more successful. Cancer of the bladder offers far better prognosis than other visceral malignancies. As in other parts of the body, precancerous lesions such as papilloma, cysts, polyps, leukoplakia, and diverticula usually exist in the bladder, and if the diagnosis is made in this stage, and proper surgical treatment is applied, cure may be expected.

Nearly all carcinomas were first benign growths and remained benign for months, often years—during which period they were easily curable. Why is recognition so often too late? The explanation is sometimes found in the patient's reluctance to present himself for examination, but all too often it lies in the family doctor's overlooking the significance of slight urinary symptoms or transient hematuria. It is a regrettable fact that we are occasionally consulted by patients who have been seen repeatedly by their family doctors for recurrent hematuria, recurrent pyuria, or other early symptoms of tumor of the bladder, and have received buchu, juniper, potassium acetate, salol, urotropin, and more recently, sulfanilamide. When the hemorrhage ceased spontaneously, the patient and doctor resolved themselves into a sort of mutual admiration society while the disease progressed insidiously to incurability. Such action, or inaction, has sealed the fate of many a hopeful, trusting, and misguided patient. The doctor who shares with the unsuspecting patient this unjustified complacency in the apparent relief obtained by such unwise treatment is not always the obscure cross-roads practitioner, but is occasionally one of the shining lights of the profession.

There is no justification for pride or even satisfaction in treatment designed to relieve the early symptoms of tumor of the bladder, however successful, without a full knowledge of the cause of these symptoms. This can be gained only by a careful and complete urological examination. Rest in bed and urinary antiseptics may give complete relief from the symptoms, but sooner or later they recur; and the next time may be too late to effect a cure. There is no more justification for this blind type of treatment than there is for giving morphine to a patient suspected of having appendicitis before the diagnosis is established and appropriate measures of treatment decided upon.

The mortality rate of carcinoma of the bladder can be and should be reduced, but this can only be accomplished by increased effort on the part of the doctor who first sees the patient. It is not my contention that every patient who presents himself to his doctor and who is found to have pus in the urine—as is often the case following certain acute infectious diseases — should have an immediate cystoscopic examination. He should be carefully observed for several weeks, and if the infection or other symptoms recur, a complete urological examination is clearly indicated. It is universally agreed among urologists that the first appearance of hematuria of unknown cause is an indication for a complete urological examination.

Aside from the various precancerous and benign lesions which are potentially malignant, true cancer of the bladder is curable in many instances, dependent upon its type, location and extent, if it is diagnosed early enough and the proper treatment is applied.

The early recognition of vesical neoplasms on clinical evidence is impossible; for, while the symptoms may indicate the existence of a tumor, cystoscopy is almost invariably essential. There are, however, valuable accessory means of diagnosis employed chiefly to supplement cystoscopy. These include physical examination, roentgenography, and cystography.

Physical examination yields no information of value in the case of pedunculated neoplasm of average size. In certain epitheliomata, induration of the bladder wall, palpable through the vagina or rectum, is of greater diagnostic significance than the cystoscopic appearances. The degree of extension of carcinoma is best determined by bimanual palpation. Large intravesical growths may be palpable suprapubically, especially those taking origin from the dome of the bladder.

Roentgenography may disclose lithiasis or incrustations which commonly occur in association with tumors of the bladder. It should also be used in searching for metastasis, particularly in bone structures.

Cystography is the most satisfactory method of visualizing deformities of the bladder due to extra-vesical tumors, and is valuable in the study of intravesical tumors where cystoscopy is inapplicable. This method has advantages in the study of tumors situated near the vesical orifice, of very large tumors, and of those occupying diverticula out of range of cystoscopic vision. Antero-posterior and lateral exposures are essential.

Intravenous urography permits visualization of the bladder, and may also disclose concomitant lesions in the kidneys or ureters resulting from infection, extension and ureteral obstruction. Primary papilloma of the renal pelvis which has given rise to vesical implants in the bladder may be revealed.

In the management of tumor of the bladder the patient's future depends not only upon the early correct diagnosis, but also upon the manner of treatment. Briefly, the urologist can divide tumors of the bladder into two groups: papillary and solid.

The method of treatment is determined by the diagnostic revelations in each particular case. It should be borne in mind: first, that almost all papillomata of the bladder, including papillary carcinomata with benign pedicles, are curable by cystoscopic fulguration; second, that no solid tumor of the bladder wall should be treated in this manner; third, that any cancer involving the bladder wall, if favorably located, should be resected with or without urethral transplantation; fourth, that when total cystectomy is necessary to effect a cure the gravity of the operation has not yet rendered Coffey's recommendations advisable or expedient, except in rare instances; fifth, that cystectomy, fulguration and radium, preceded or followed by deep x-ray therapy, is seldom, if ever, productive of more than palliative relief; and sixth, that radium has not met all our expectations.

Since the success of treatment depends upon early diagnosis, the most important feature of the problem is: How may the correct diagnosis be accomplished at the earliest possible moment?

The following suggestions are given as a possible means to that end:

(1) Routine periodic urinalysis.
(2) Recognition of the indications for urological examination.
(3) Immediate reference of the case to a competent urologist upon the first appearance of hematuria, the cause of which is not definitely known.
(4) Education of the public in urological matters — especially the frequency with which malignancies are met with in the urinary tract.

A part of the responsibility for the proper dissemination of this important information rests with the departments of public health, but perhaps a larger share falls upon the family physician, or upon whatever physician is first called upon to attend the patient with early symptoms of carcinoma of the bladder. One does not always realize the responsibility involved in the reporting of a simple urinalysis. A patient with slight hematuria or pyuria whose symptoms have promptly responded to a urinary antiseptic may later return with advanced carcinoma of the bladder which might have been prevented or cured if a correct diagnosis had been made when the patient was first seen. When a patient presents himself for examination and treatment of hematuria or pyuria, he should be told frankly of the possible causes of these symptoms in order that he will keep in touch with his physician until a cause of his trouble is definitely determined. His attention should be directed to something more important than immediate relief of symptoms. If pyuria is refractive to ordinary treatment or recurs after first responding to treatment, then immediate reference of the patient to a competent urologist is definitely warranted.

The responsibility will then rest with the urologist to make the diagnosis early. By detecting tumors in the precancerous stage the mortality rate of cancer of the bladder may be materially reduced.

The sputum-positive cases are a matter of grave concern. They insist upon being discharged to their families and the community; yet segregation is of first importance in controlling tuberculosis. By segregation did our ancestors rid the country of leprosy. Welsh Nat'l. Mem. Assn. Report, Tubercle, Nov., 1939.

CANCER OF THE BONE

R. A. Moore, M. D.

Winston-Salem

In considering the early signs and symptoms of cancer of the bone, I do not wish to be an alarmist; however, I want to emphasize the necessity for making a thorough investigation of any evidence which would suggest a lesion of such a serious character.

Unfortunately, there is no characteristic set of symptoms in the early stages of bone cancer that lead us to suspect such a condition. The age incidence is of no definite value to us, since malignancy may occur in any age; however, there are certain pathological types that occur in certain ages. Primary chondro-sarcoma usually occurs between the ages of fourteen and twenty-one years; secondary chondro-sarcoma between thirty and fifty years; sclerosing osteogentic sarcoma up to twenty-five years; osteolytic sarcoma up to twenty years. However, most patients complain of pain in the area, although in multiple myeloma the pains are of rheumatic nature, often shifting from one portion of the body to another. The pain in the early stages is not severe, but quite frequently the patient complains of being unable to sleep. There is often an elevation of temperature and a leukocytosis, suggesting an infection; since many of these tumors occur in the teen age, they may easily be confused with osteomyelitis. The blood picture is not characteristic, but there may be leukocytosis. Geschickter and Copeland say that no particular significance need be attached to this unless the temperature is over 101, or the leukocyte count is above 18,000.

Physical examination in the early stages may not reveal anything more than a tender, slightly enlarged, area of the bone, or thickening through the part, usually in the diaphyseal area. Most malignant tumors of the bone do not invade the epiphysis nor cross the epiphyseal line until late. The mass may have a crepitant and pulsating feel.

Our diagnosis is most often made by the x-ray, which is very characteristic in many cases. The final diagnosis is made by the pathologist.

CANCER OF THE LUNG

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GREENSBORO

In the past we have all been led to believe that cancer of the lung was a rarity. That we are mistaken in this belief is indicated in the autopsy findings of Koletsky(1), who found that the lung was the second most frequent site of primary malignancy, ranking next to the stomach. Jaffe(2) found that the lung was in third place, with the stomach first and the intestines second. Approximately 10 per cent of our primary carcinomas originate in the lung(3). Cancer of the lung is a disease of maturity, but may be found in the twenties and thirties. There is a relative as well as an absolute increase in frequency.

The general consensus of opinion now is that all primary carcinomas of the lung arise from a single undifferentiated parent cell located in the basal layer of the bronchial epithelium. The degree of differentiation determines whether it will be squamous cell, adenocarcinoma, undifferentiated round cell, spindle cell or "oat cell"(4).

According to the classification of Overholt and Remul(4), from a clinicopathological standpoint the symptoms and signs may conveniently be divided into three stages:

1. *Stage before bronchial occlusion:* Soon after the tumor begins to grow, its presence causes irritation of the sensitive bronchial mucosa, which results in a dry, irritative cough — the earliest, most constant, and therefore most important symptom in the majority of cases. The cough obviously cannot remove the irritating agent; so an increased amount of bronchial secretion is produced in an effort to wash out the foreign body, resulting in clear, thin mucoid sputum. As the tumor enlarges, the trauma from coughing and degenerative changes produce ulceration of its surface, accounting for the appearance of blood streaked sputum, and a tendency for it to become purulent. Physical manifestations or roentgenographic changes are not present during this stage, because the tumor is too small. It is important to realize that the diagnosis can usually be established with the bronchoscope, even at this early stage, because the majority of primary carcinomas of the lung arise in the stem bronchi.

2. *Stage of bronchial occlusion*

A. *Partial occlusion with emphysema:* The tumor increases in size, causing partial obstruction of the bronchus. Air is forcefully drawn past the obstruction during inspiration, but the elastic recoil of the lung is unable to force it back past the obstruction, and it is trapped in the affected segment. This results in emphysema of the segment of lung supplied by the affected bronchus, and produces the wheezing or asthmatic breathing which is another frequent early symptom. Physical examination during this stage reveals hyper-resonant percussion notes, emphysematous breath sounds, and moist expiratory rales and ronchi. The x-ray may show a wedge-shaped area of decreased density, with convex limiting borders.

B. *Complete occlusion with atelectasis:* Complete occlusion, of course, produces atelectasis. Dyspnea is the result. This causes the discomfort, or feeling of weight and constriction noted at this stage. Pain of any severity is not a part of the picture of early carcinoma of the lung, and, when present, is usually due to pleurisy resulting from a complicating inflammatory process. The severe pain usually described as being an outstanding symptom of this disease occurs in the later stage as a result of extension or metastasis to the pleura, bones, nerve structure or other organs.

Atelectasis is by far the most frequent pathologic change giving rise to physical manifestations at an early stage. These manifestations are: diminished or absent tactile fremitus; dullness or flatness on percussion; decreased breath sounds, which, if present at all, are of broncho-vesicular or bronchial quality; mediastinal shift toward the affected side; elevation of the diaphragm; narrowing of the intercostal spaces; and compensatory emphysema of the unaffected segment. X-ray will show a wedge-shaped density with concave borders extending from hilus to chest wall, and an elevated diaphragm. A flat and lateral view gives most information. The tumor itself casts a shadow

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1. Koletsky, Simon: Primary Carcinoma of the Lung, Arch. Int. Med. 62:636 (October) 1938.
2. Jaffe, R. H.: Primary Carcinoma of the Lung, J. Lab. and Clin. Med. 20:1227 (September) 1935.
3. Overholt, R. H. and Remul, W. R.: Clinical Studies of Primary Cancer of the Lung, in 1939 Year Book of General Medicine, Chicago, Year Book Publishers, 1940.
4. Overholt, Richard H. and Remul, William R.: Clinical Studies of Primary Cancer of the Lung, J. A. M. A. 114: 735 (March 2) 1940.

in only a small percentage of cases at an early stage. This is more apt to be seen in a peripherally located tumor.

C. *Bronchial occlusion with secondary infection:* With bronchial occlusion and ulceration, secondary infection of the bronchial tree usually occurs, because the ability of the ciliated epithelium to sweep out the bacteria is destroyed. This may progress into bronchitis, bronchiectasis, pneumonia (or pneumonitis), abscess, or even gangrene of the entire segment. The signs and symptoms are obviously so extremely variable, since there are so many factors involved in their production, that they need not be enumerated here. The x-ray appearance is that of uncomplicated occlusion, plus the changes incident to the various inflammatory processes that may be present.

3. *Stage of extension or metastases:* Many other signs, symptoms, and roentgenologic changes are due to extension or metastases: dysphagia, abnormal symptoms of the central nervous system, phrenic nerve paralysis, dilated veins of the neck, chest wall or upper extremity, severe pain, dyspnea, hemoptysis, and diffuse carcinomatous infiltrations of the lung; however, these are all signs of the disease after the possibility of cure has passed.

Summary

(1) Partial or complete occlusion of the bronchus, or bronciole, with or without secondary infection, produces the most important pathologic changes giving rise to early symptoms and signs. (2) Bronchoscopic examination is by far the most important diagnostic procedure available, and should be done without delay in a case in which a dry or productive cough develops, alone or in association with blood streaked sputum, wheezing, dyspnea, chest discomfort, or other symptoms suggestive of early primary carcinoma of the lung which cannot be definitely explained on some other basis.

Neglected Foundations in Education.—Today, we have the problem which arises from the tendency to rush through the years of general education toward the benefits of the special fields which can be reached only through higher and special education. We sometimes act as if we want to build the upper floors of our buildings without bothering much about the supporting foundations.—Caldwell, Otis W.: Some Problems of an Educated Minority, Science 89: 2322 (June 30) 1939.

CANCER OF THE CERVIX AND UTERUS

Moir S. Martin, M.D., F.A.C.S.

Mt. Airy

Though there have been marked advances made in medical progress and much educational work done among the laity, cancer is on the increase. It has been stated that one death out of every seventeen is from cancer. Hoffman has said that in the United States alone 13,000 women die each year from cancer of the uterus (cervix and body).

A recent article by Dr. J. C. Masson of Mayo Clinic stated: "At present, the increase in the number of deaths from cancer of the uterus is real, not apparent. Some authors have suggested that this increase is the result of increased accuracy of diagnosis. This does not seem likely as the symptoms of advanced cancer of the uterus could hardly be confused with those of any other disease. One reason for the increased incidence of deaths from this cause, of course, is preventive medicine and higher standards of living, as the result of which more people live to the cancer age.

"Recent statistics show that cancer develops in the uterus more frequently than in any other organ or part of the female body. Of 4,407 cases of cancer of the uterus observed at the Mayo Clinic from 1910 to 1938 inclusive, 3,273 were primary in the cervix and 1,134 were in the uterine body. Of this number, 3,097 women with cervical cancers and 1,122 women with primary cancers in the body of the uterus received treatment at the Mayo Clinic. The ratio of carcinoma of the cervix to carcinoma of the uterine body in this series is as 2.9 to 1."

Cancer of the cervix occurs at an earlier age than does cancer of the body of the uterus. In cancer of the cervix "the age incidence rises after the thirty-fifth year of life"; on the other hand "the marked rise in incidence of cancer of the body of the uterus occurs after the fiftieth year of life."

The late or advanced signs and symptoms of cancer, such as anemia, loss of weight, and pain, are purposely omitted in this brief discussion, and I shall confine my remarks strictly to the most important and outstanding symptoms of early cases.

The important fact for us, as doctors, to remember is that cancer of the uterus and cervix does not present early signs and symptoms. Among the earliest symptoms are watery vaginal discharge, irritating and slightly offensive, and *abnormal* discharge of blood, such as spotting or bleeding between menstruations and following intercourse. Occasionally a rather free hemorrhage occurs from an extensive ulceration in the uterus which has been practically symptomless before. Frequently this is the warning of a well advanced cancer.

Cutler and Buschke, in their recent book, make the bold statement that "vaginal discharge and bleeding constitute the only two early signs of cervical carcinoma."

Hemorrhage is the most common symptom, and when it occurs after the complete cessation of the menses, should be regarded as the result of malignancy until it can be proven otherwise. Hemorrhage occurring during the change of life is more difficult of interpretation.

Palpation sometimes is helpful when there is induration and thickening around the cervix and fixation of the cervix and body of the uterus. The mobility of the cervix will, of course, depend upon whether the tissue around the cervix has been invaded. When there is definite finding of thickening and induration, a suspicious mind should cause one to investigate further. One of the most important diagnostic procedures is the use of the speculum, properly exposing the cervix with a good light. A colposcope may be used here, and, because of the magnification, may be helpful; however interpretation is difficult for the inexperienced operator.

If inspection shows any irregularity of the cervix, such as erosion, ulceration or papillary growth, further investigation should be made and the probe test should be done. This consists in pushing a small, blunt probe gently against the suspicious area of the cervix. If the probe meets resistance and slides off, the lesion is probably not cancer. If the probe sinks in easily, the lesion probably is cancer, and will require a biopsy.

One may use the Schiller or iodine test, which consists in painting the vagina and cervix with Lugol's solution or with diluted tincture of iodine. The normal cervical and vaginal epithelium stains dark brown because of its glycogen content. In leukoplakia and cancer, glycogen is not present, and these areas are stained only slightly or not at all. This test is not pathognomonic, because chronic inflammatory conditions, erosions, lacerations, hyperkeratoses and ulcerations may remain unstained.

Schiller's test for carcinoma of the cervix may be helpful in locating the area for biopsy. Great care should be used to obtain a specimen sufficiently large for a proper examination. A piece of tissue 3 to 4 mm. in diameter and 2 to 3 mm. thick is excised from the most suspicious area with sharp scissors or a knife. If the bleeding is profuse, the cautery or a catgut stitch can be used to control it. The cautery should not be used for the removal of the specimen, as cooking the tissue frequently destroys the cells for microscopic study. The tissue should not be handled, but should immediately be placed in a 4 per cent formalin solution and sent to the pathologist without delay. In the early and questionable cases the only means of reaching a positive diagnosis is a study of the suspected tissue by a competent pathologist.

The clinical symptoms of cancer of the body of the uterus are similar to those of cancer of the cervix. The discharge, which is usually intermittent because of obstruction in the cervical canal, may be watery, bloody or leukorrheal. There may be days when there is little or no discharge. The obstruction may cause a feeling of heaviness or pressure simulating menstrual pain.

In the fairly early stages palpation may reveal a localized firmness or induration of the cervix. Especially is this true of the endocervical type. Both rectal and vaginal palpation may be helpful in finding the extent of the disease in and around the cervix, and in detecting the presence of vaginal thickening.

Enlargement of the uterus may or may not occur, depending on the size or extent of the cancer. Inspection may or may not be helpful, depending upon whether the mass is protruding through the cervix. The passage of a uterine sound may cause bright red blood to pass from the uterine canal—"Clark's Sign". In the absence of cancer, the passage of bright red blood seldom occurs.

Diagnostic curettage should be performed in all suspected cases, and the curettement must be thorough and complete. The scrapings must be carefully examined microscopically, and repeatedly examined if negative; for it is easy for a small malignant area to escape the curette or the microscope.

CANCER OF THE BREAST

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Except for those conditions associated with the lactating breast, the most common tumors of the breast are chronic cystic mastitis, adenofibromata, cysts and carcinoma.

Although chronic cystic mastitis is generally thought to be due to a disturbed endocrine function, the exact relationship is, of course, not understood. It seems to be definitely related to incomplete involutional changes throughout the breast or in localized areas. Lehman(1) points out that this failure of complete involution, which is more often seen in younger women, means retention in the breast of hyperemia, hyperplasia and infiltration. Since malignant changes have been found in these conditions frequently enough for some authorities to consider them precancerous, we should not be satisfied with giving a cursory examination and dismissing the possibility of future malignant changes.

When one is confronted with a typical case of chronic cystic mastitis, which shows a bilateral lumpy condition of the breast, the diagnosis is easy. But the diagnosis of an early carcinoma in such a breast may be a real problem. If examination shows a lump which differs in contour or in consistency from the other lumps, biopsy is necessary.

The majority of patients who present themselves for examination on account of a lump in the breast, particularly young women, have adenofibromata or cysts. By considering the patient's age and the physical findings, a correct diagnosis of benign tumor can be made in a great majority of these patients.

Early carcinoma may be correctly diagnosed or strongly suspected when one considers the age of the patient, the history of onset, the progress and the findings upon physical examination. Naturally, the most important consideration here is its differential diagnosis from various benign tumors.

Pain and discharge from the nipple, especially if this discharge is not bloody, are of no particular importance. Adair is of the opinion that about 50 per cent of those patients who show a bloody discharge from the nipple, which means an ulcerated intraductal lesion, have cancer. He says that those over fifty years of age show cancer in a proportion of more than 50 per cent, while the incidence of cancer is less in those under fifty.

When one examines a breast, regardless of the age of the patient or the history, and finds a discrete, firm, regular or irregular tumor, excision of the mass for pathological study is indicated. Retraction of the nipple is of little or no importance in determining the presence or absence of malignancy, unless other signs are present. However, fixation of the tumor, retraction of the overlying skin and enlarged axillary nodes make the diagnosis tragically obvious.

Palpation of the tumor against the chest wall yields much more information than pressing it between the fingers. In this manner one feels it through only one layer of skin and subcutaneous tissue instead of two layers.

Transillumination is a valuable aid when carried out by those experienced with this procedure. It is particularly useful if the light is so directed that any irregularity of the skin over the tumor is demonstrated by a shadow. This phenomenon is produced by a shortening of the subcutaneous ligaments due to contraction of the stroma of a malignant tumor. Translucency may also be observed in cysts with clear fluid.

Injection of the ducts with a contrast medium, sometimes followed by air injection, has been done by Hicken and Best for x-ray studies. Aspiration biopsy or removal of tissue with a special biopsy instrument is advocated by some. The former method, aspiration biopsy, is frequently used at the Memorial Hospital in New York.

For most of us, it appears to me, complete removal of the tumor mass is far more practical and safer. Even with all the tumor mass, the pathologist may have difficulty in determining its exact nature.

In a review of 200 patients admitted to the Cleveland Clinic complaining of a lump in the breast, Dr. George W. Crile, Jr.,(2) reported that in 43 per cent the lump proved to be malignant. Seventy-five per cent of those with carcinoma were over fifty years of age; in only 12 patients over fifty years of age did the lump prove to be benign.

From this statistical study it was concluded that the chances are 3 to 1 in favor

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1. Lehman, E. P.: The Approach of a Lump in the Breast, Virginia M. Monthly, 67:197, 1940.

2. Crile, G. W., Jr.: The Clinical Significance of a Lump in the Breast, Cleveland Clin. Quart. 6:281, 1939.

of the tumor being malignant when found in a woman beyond fifty. On the other hand, the chances are nearly 20 to 1 in favor of the tumor being benign when found in a woman under forty. In the forties the chances are about 50-50.

In reviewing my own group of patients who were subjected to operation. I find that 25.6 per cent of all tumors removed proved to be cancers. The frequency of benign and malignant tumors according to age groups conformed pretty well with the statistics quoted by the Cleveland Clinic.

Summary

The most common benign tumors and carcinoma of the breast are discussed. The fact is emphasized that lumps developing in women past fifty years of age are usually malignant. For most of us physicians, biopsy should be the rule for any discrete tumor of the breast, regardless of age or sex, unless regressive changes take place during a reasonable period of observation.

THE DIAGNOSIS AND MANAGEMENT OF LATENT SYPHILIS

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and

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Latent syphilis may be defined as the hidden stage of syphilis. It begins with the healing of the open lesions of early syphilis, spontaneously or under the influence of inadequate treatment. It lasts for a variable period of time ranging from a few months to years. It is terminated either by death from causes other than syphilis or by extension of the deep-seated incipient lesions of syphilis above the clinical threshold.

There is no way to recognize latent syphilis except by a serological study or by a previous history of the infection in the individual. The serological test for syphilis is positive in the vast majority of untreated cases of latent syphilis during the first two decades after the onset of the infection. Among inadequately treated cases, however, the results of the serological examination often fluctuate between positive, doubtful, and negative.

As has already been emphasized, the diagnosis of latent syphilis depends upon serological or historical confirmation, rather than upon clinical findings. Because of this fact, certainly in the absence of historical evidence of syphilis, latent syphilis should be diagnosed only after repeated positive blood tests performed by an approved laboratory carrying out a recognized serological test for syphilis. If conflicting reports are given, specimens should be sent to several different laboratories before treatment is started.

The more meticulous the examination and the more acute the diagnostic acumen of the observer, the smaller will be the group of cases which are ultimately dumped into the diagnostic wastebasket known as latent syphilis, and the greater the number of patients found with infectious relapses, cardiovascular syphilis, central nervous system syphilis, and other types of visceral syphilis. Since early recognition of these conditions has a direct bearing on the immediate treatment and the ultimate prognosis of the patient, it is imperative that in addition to the usual physical examination the following diagnostic procedures be followed in doubtful cases:

1. Detailed examination of the skin and readily examined mucous membranes for suspicious lesions.
2. Careful appraisal of the cardiovascular system. This should include, in addition to the usual stethoscopic examination, roentgenological studies of the cardiovascular stripe, particularly in the left anterior oblique position. Studies of aortic function should be made under the fluoroscope. Palpation of vessels in the extremities, studies of retinal vessels, and blood pressure findings will aid in evaluating the state of the general vascular tree.
3. Examination of the deep and superficial reflexes, and analysis of the spinal fluid. A cell count, Pandy, (and if possible, quantitative protein and globulin determination), measurement of spinal fluid serology, and the determination of the colloidal stability

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From the Section of Dermatology and Syphilology of the Department of Medicine, Duke University School of Medicine; and the North Carolina State Board of Health, Raleigh.

of the spinal fluid with either gold chloride or gum mastic are necessary. An examination of the function of the retinal nerve by charting visual fields is of particular importance in managing the treatment regime of a patient with evidence of central nervous system syphilis.

4. Investigation of patient's family and contacts.

As far as the manifestations of syphilis are concerned, the patient with latent syphilis is clinically and symptomatically normal except for a positive serological test. Even after he completes one or two years of treatment, his physical status will very likely remain unchanged. He may still have a positive serological test for syphilis, and barring the introduction of other debilitating factors, he will feel no change in his condition. However, some of the imperative reasons for treating patients with latent syphilis are the following:

1. Over one-third of untreated patients with syphilis ultimately develop manifestations of cardiovascular syphilis.
2. Approximately one-fourth of untreated patients with syphilis acquire clinical evidence of central nervous system syphilis.
3. About three-fourths of the infants born to women with syphilis are syphilitic; this is almost totally preventable by adequate treatment during the last five months of pregnancy.

As in early infectious syphilis, a patient with latent syphilis can be treated satisfactorily according to a standard routine. The treatment schedule differs from that of early syphilis in this respect: It is highly probable that the patient has innumerable deep-seated, well-established active foci of the disease, and many of these lesions may be located in vital structures. Therefore, it is essential that the suppression of spirochetal activity and the ultimate healing of these foci be accomplished with the least possible disturbance to the organism as a whole. The danger of a therapeutic shock (Jarisch-Herxheimer reaction) and the therapeutic paradox of Wile must be kept in mind. Some of the more common accidents which occur are coronary stenosis, transverse myelitis, and paralyses. They occur from the too rapid destruction of spirochetes, with a concomitant physiological reaction of the body characterized by marked focal edema and later excessive scarring around these focal areas if the individual survives the initial edematous reaction. To prevent these unfavorable responses to antisyphilitic treatment, arsenical preparations are to be avoided for the first course among patients with latent syphilis. These patients should be started on bismuth. Fortunately, bismuth rarely causes a Herxheimer reaction and does promote slow healing of the focal areas of infection. An acceptable treatment schedule for latent syphilis follows:

TREATMENT SCHEDULE FOR PATIENTS WITH LATENT SYPHILIS

Weeks	Drug	Dosage	Drug	Dosage	Remarks
1-6	Bismuth subsalicylate	0.2			
7			Neoarsphenamine	0.3	Spinal fluid examination, fluoroscopy, and/or x-ray.
8			Neoarsphenamine	0.45	
9			Neoarsphenamine	0.6	
10			Neoarsphenamine	0.6	
11			Neoarsphenamine	0.6	
12			Neoarsphenamine	0.6	
13			Neoarsphenamine	0.6	
14			Neoarsphenamine	0.6	
15-24	Bismuth subsalicylate	0.2			
25-32			Neoarsphenamine	0.6	
33-40	Bismuth subsalicylate	0.2			
41-47			Neoarsphenamine	0.6	
48-55	Bismuth subsalicylate	0.2			
56-61			Neoarsphenamine	0.6	
62-70	Bismuth subsalicylate	0.2			

Latent syphilis in its relation to the public health presents a totally different picture from that of early infectious syphilis. The immediate intimate sexual contacts of latent syphilis cases are usually not infected; on the other hand, family contacts frequently are. This is readily apparent when one reflects that the individual with latent syphilis may have infected his wife years before, during the open lesion phase of early syphilis, and she may have subsequently infected her children born since the onset of her infection; whereas, at the present stage of the disease, the patient is unable to transmit the infection to others. It is also to be borne in mind that since clinical manifestations of syphilis can simulate most of the diseases of man, many cases of latent syphilis will be uncovered by routinely testing the blood of every patient who presents himself for medical care, whether in private practice or on a hospital service.

In summary, the diagnosis of latent syphilis depends upon the exclusion of clinical manifestations of syphilis and confirmation either by repeated serological tests for syphilis or by historical evidence of inadequately treated syphilis. Every doubtful case should have a complete physical examination, with special emphasis on the cardiovascular and central nervous systems. A spinal fluid examination is imperative. Familial contacts are the most important in case finding. Treatment should be continuous, without rest periods, and should be begun with bismuth.

A SYNTHETIC ESTROGENIC HORMONE

A Preliminary Report

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Wilmington

The field of hormonotherapy has now reached the stage of maturity where we no longer see the epoch-making events that we did in the earlier days when the various hormones were first discovered, isolated, and made available to the profession. The more recent advances in this important field of medicine consist mostly of routine laboratory work—the purifying, synthesizing, and substitution of those products already discovered. These developments, not so interesting as the original discoveries, are none the less important, and it is one of these more recent laboratory advances that I wish to report.

Ovarian hypofunction, particularly at the time of the climacteric, is one of the commonest, and at times one of the most distressing endocrine disorders which we encounter. Estrone (Theelin) and Estriol (Theelol) have been available commercially for a number of years, and are quite effective in replacement therapy, when given in adequate dosage. The hypodermic form, Estrone, has proven more effective than the oral preparation, Estriol, because the latter is poorly absorbed. In the menopause, the average dose required to maintain complete relief is 10,000 international units at intervals of from five to fifteen days, depending on the weight of the patient and the degree of ovarian hypofunction. The more recently available forms, a-estradiol benzoate and diproprionate, are said to require somewhat smaller dosage.

In 1938 Dodds and Lawson of England reported that the phenanthrene ring, the mother substance of the natural hormone, is not a prerequisite to the estrogenic activity of a compound. Dianol, a phenolic gum, Dianethole and derivatives, were proved to be active in producing estrus in ovariectomized rats. Many such compounds were tried, and a-b diphenylethylen, or stilbene, was found most promising. Stilbene is obtained by treating benzaldehyde with benzyl magnesium bromide and distilling it after acidifying with sulfuric acid. The dehydroxy diethyl stilbene, known as diethylstilbestrol, and its diproprionic acid ester have proven to be the most effective estrogens of the group.

The estrogenic action of these compounds in various laboratory animals was thoroughly investigated and reported in the British literature in 1938 and 1939 by Dodds, Lawson, Robinson, Noble, Parkes, Folley, and others(1 2 3 4). The synthetic preparation was found to be somewhat more active than the

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Read before the New Hanover County Medical Society, May 23, 1940.

1. Dodds, E. C.; Goldberg, L.; Lawson, W., and Robinson, R., in Nature 141:247, 1938.
2. Dodds, E. C.; Lawson, W., and Noble, R. L., in Brit. M. J. 2:557, 1938.
3. Noble, R. L., in Lancet 2:192, 1938.
4. Parkes, A. S.; Dodds, E. C., and Noble, R. L., in Brit. M. J. 2:557, 1938.

natural hormone when given either orally as diethylstilbestrol, or intramuscularly as diethylstilbestrol, or as the diproprionate. The minimum lethal dose was found to be 1800 times the average effective dose.

During 1939 these compounds were tried in the place of natural estrogens in the treatment of various forms of ovarian hypofunction in human beings. Bishop, Boycott, and Zuckerman(5) reported a series of forty-six cases; Winterton and MacGregor(6), a series of forty-five; and Loeser(7) a series of fifteen —all in British periodicals. Their results were uniformly good, though a relatively large number of their patients exhibited toxic effects in the form of nausea and sometimes vomiting. This year several articles on the subject have appeared in our own literature.

Buxton and Engle(8) reported a series of 17 cases of ovarian hypofunction, treated with diethylstilbestrol by mouth and intramuscularly. Results were comparable to those obtained with natural estrogens; in only one case was nausea observed, although the drug was given by mouth in doses up to thirty milligrams (600,000 international units) daily for as long as twenty-five days. Minute laboratory investigation failed to reveal any evidence of toxicity.

MacBryde, Freedman, and Loeffel(9) reported 37 cases, treated with diethylstilbestrol both by mouth and intramuscularly. Their results were the same as reported above, except that they noticed a little more nausea than did Buxton and Engle.

Collins et al(10) reported 50 cases, with similar results.

It is my purpose here to report an additional 24 cases. In these, however, the diproprionic acid ester was used, rather than the straight stilbestrol.

In July, 1939, the Department of Medical Research, Winthrop Chemical Company, supplied me with stilbestrol which they provisionally called E-391. The peroral and parenteral administration of this nonesterfied compound produced a series of by-effects —notably nausea and vomiting—which were thought to be due to the rapid absorption of what is now considered a rather large dose. The plain diethylstilbene was discontinued and its propionic acid ester substituted. The latter proved to give a more sustained effect, as the result of slower and more even absorption. The incidence of nausea and other unpleasant effects was less than that observed with the first preparation. The encouraging clinical response is summarized in the accompanying table. A total of 210 intramuscular injections were given to 24 patients. Unfavorable reaction was noted in only one case; in this case we were unable to administer the drug because of sensitivity. In each case presenting nervousness as a chief or prominent complaint, sedation with barbiturates and bromides was given an adequate therapeutic trial before beginning estrogenic treatment.

Thirteen patients with complete menopause, two of them following surgery, were treated, with excellent results in ten cases, good results in one, fair in one, and failure in the one who could not take the drug. One of these patients suffered particularly from post-menstrual migraine, and has noted considerable improvement. Of three patients who complained of the so-called menstrual arthritis, two were relieved. Two cases presented marked hypertension, and in one of these the pressure returned to normal.

Six cases of ovarian hypofunction, or early incomplete menopause, are included. Results were excellent in one case, good in three, fair in one, and poor in one.

One case of menstrual urticaria responded beautifully, but treatment was discontinued because of sensitivity to peanut oil, in which the drug was dissolved.

A relatively young woman with hypertension who was under treatment elsewhere with Estrone was given one injection of .1 mg. In twenty-four hours her blood pressure fell from 190 to 130, systolic. She said this was the usual result obtained with Theelin.

The preparation was used in two cases of nausea of early pregnancy, with fair results —about comparable to those obtained with Estrone.

An effort has been made to evaluate the lasting qualities of the drug, and to establish a minimal effective dose. In each case the initial dose was small—.05 to .1 mg.—in

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5. Bishop, P. M. F.; Boycott, M., and Zuckerman, S., in Lancet 1:5, 1939.
6. Winterton, W. R., and MacGregor, T. N., in Brit. M. J. 1:7, 1939.
7. Locser, A. A., in Brit. M. J. 1:13, 1939.
8. Buxton, C. L., and Engle, E. T., in J. A. M. A. 113: 2318, 1939.
9. MacBryde, C. M.: Freedman, H., and Loeffel, E., in J. A. M. A. 113:2320, 1939.
10. Collins, C. G.; Weed, J. C.; Weinstein, B. B., and Lock, F. R., in Am. J. Obst. and Gynec. 39:117, 1940.

Case	Age	Diagnosis	Flashes	Nervousness	Hypertension	Amenorrhea	Oligomenorrhea	Arthritis	Period of Treatment (Weeks)	Number of Doses	Total Dose (Mgs.)	Maintenance Dose (Days per Milligram)	Results
1.	52	Menopause	xxx	xxx		x			10	13	11	15	Excellent
2.	48	Menopause	xx	x		x			6	5	5	10	Excellent
3.	44	Menopause	xx	xxx	x	x			12	9	7	21	Excellent
4.	49	Menopause	xx	xxx		x		x	4	7	6	8	Excellent
5.	49	Menopause (S)	x	xxxx		x			2	3	2		None
6.	46	Menopause	xx	xx		x			16	11	10	16	Excellent
7.	42	Menopause	x	xxx		x			11	12	10	10	Excellent
8.	41	Menopause	xx	xx		x		x		3	3	18	Excellent
9.	40	Menopause	xxxx	xx		x			14	17	8	21	Excellent
10.	50	Menopause	xx	xxxx		x			4	6	5		Excellent
11.	46	Menopause	xxx	xx	xx	x		xx	14	15	11	18	Fair
12.	44	Menopause (S)	xx	xxx		x			4	6	5		Excellent
13.	51	Menopause	x		x				4	5	4		Good
14.	46	Menopause and Migraine	x	xxx		x			5	6	5		Good
15.	35	Ovarian Hypofunction	x	xxxx			xx	x	32	23	5	21	Good
16.	35	Hypofunction	x	xxxx			xx	x	5	5	4		Good
17.	40	Hypofunction	xx	xxx			xx	x	4	4	.4		Good
18.	40	Hypofunction (S)	x	xxx					32	12	11	30	Excellent
19.	30	Hypofunction	x	x	x			x	12	14	13		Poor
20.	41	Hypofunction	x	xxxx	x			x	44	20	56		Fair
21.	40	Hypertension		x	xx				3	2	.2		Excellent
22.	39	Urticaria							4	4	.4		Excellent
23.	35	Nausea of Pregnancy							12	6	1.2		Excellent
24.	21	Nausea of Pregnancy							3	1	.2		Excellent

order to detect any idiosyncrasy. Injections were given at three or four day intervals, the dose being increased rapidly to 1 mg., and continued at this rate until complete relief was obtained. In the cases of menopause, less than one hot flash in three days was considered complete relief. At this point the injections were spaced further and further apart until the symptoms began to return. The patient was the sole judge of how often she needed treatment. The series is too short for definite conclusions, but the maintenance requirement varied from 1 mg. every eight days to 1 mg. every twenty-one days. This compares favorably with the usual results from natural estrogens. The period of treatment has lasted up to twenty-three weeks. The interval following the last injection has been as long as four months, and most of these patients are still free of symptoms. Two have returned for another course of treatment, and have been relieved by the second or third dose.

Summary

An entirely synthetic substance, diethylstilbestrol diproprionate, is similar in chemical structure, but not identical with Estrone, possesses estrogenic properties equal to or better than the natural hormone itself and is definitely superior to the related compound, stilbestrol. The use of the diproprionate in twenty-four cases of various types of ovarian hypofunction is reported, with uniformly good therapeutic results, and with no untoward side reactions.

DAVID A. STANTON, M.D., F.A.C.S.

By

FREDERICK R. TAYLOR, M.D., F.A.C.P.

David A. Stanton, Sr., was born in Randolph County on May 24, 1859. He is the son of George Fox and Ruhanna Vickery Stanton, and was the fifth in a family of six children. His early schooling was obtained at several different private and public schools. After one term at New Garden Boarding School—later Guilford College—he worked at home on his father's farm for two years, and then entered the Medical Department of Vanderbilt University. He received his degree from there in February, 1887, having led his class in Materia Medica.

In April, 1887, Dr. Stanton took the North

Read at a special meeting of the Guilford County Medical Society held at the Sheraton Hotel, High Point, May 2, 1940, in honor of Dr. David A. Stanton, and commemorating his fifty-three years of medical practice and civic service.

Carolina State Medical Board examinations and received his license to practice. For a year he did general practice in Randleman. On September 28, 1887, he married Miss Susan C. Coltrane. Four children have been born to this union, three of whom—Dr. T. M. Stanton, Mrs. Archibald Sherrod and Mr. David A. Stanton, Jr.—are now living.

Dr. Stanton moved from Randleman to Lexington, where he practiced for two years. During this time he devised an instrument for cutting urethral strictures, which was manufactured and sold by George Tiemann and Co. of New York City.

By this time the excellence of his work and his sterling character had attracted the attention of Dr. J. J. Cox of High Point, who invited him to move to this city. He came here in 1891, associating himself with Dr. Cox for nearly five years, until Dr. Cox retired. On moving to High Point, Dr. Stanton joined the Methodist Episcopal Church, South, and for about thirty years he has been a valued member of the Board of Stewards of what is now the Wesley Memorial Church. For the past several years he has also been a trustee of this church. During his early years in High Point he devised a fracture box for children which proved very successful.

In May, 1895, Dr. John Wesley Long joined Dr. Stanton in partnership. This partnership lasted until the following October, when Dr. Long moved to Salisbury. Since then Dr. Stanton has practiced independently, though he has shared his reception room with a number of other physicians. Drs. T. M. Stanton, J. W. Slate and J. E. Slate are now associated with him in the Stanton Clinic.

An active general practitioner of the highest standing for fifty-three years, "Dr. D. A.", as we lovingly call him, early developed a special interest in surgery. In 1906 he spent a month in surgery at the Mayo Clinic and in 1916 a similar period there and at the Cook County Hospital, Chicago, under Dr. A. J. Ochsner, Sr. He has also done postgraduate work in Philadelphia, New York and Boston.

Dr. Stanton, more than any other man, was responsible for the organization of the Guilford County Medical Society in 1891, and was its first secretary. The Society was organized in its present form in 1903, and Dr. Stanton was president in 1906. From 1907 to 1913 he was Secretary of the Medical Society of the State of North Carolina. In 1896 he was one of the vice presidents of that Society. He was Councilor for the Eighth District from 1904 to 1906. From 1925 to 1931 he was a member of the North Carolina State Board of Health. He was one of two members of that Board to serve on the State Embalmer's Examining Board. He served one year on the State Board of Nursing Examiners.

Dr. Stanton was one of the founders of the Junior Order Hospital, which developed into the High Point Hospital—now the Burrus Memorial Hospital. He became Consulting Surgeon to the Guilford General Hospital shortly after the organization of that institution, and a few years later was made a regular member of the staff. He was High Point City Physician from 1921 to 1924. Since 1894 he has been local Southern Railway Surgeon.

Besides being an Honorary Fellow of this Society and of the State Medical Society, and a member of the American Medical Association, Dr. Stanton is a charter member of the Tri-State Medical Society of the Carolinas and Virginia, and served as vice president of that society in the second year of its existence, after declining the presidency. He is also a member of the Southern Medical Association and a Fellow of the American College of Surgeons.

Dr. Stanton was appointed Mayor of High Point in 1918 to fill out the unexpired term of W. P. Ragan, deceased. He was then elected Mayor for the ensuing term of two years without opposition, on a non-partisan basis. He served at different times a total of eight years on the High Point City Council. During his administration as Mayor the present magnificent municipal water supply of High Point was established, largely through his efforts. In this same term of office he showed singular wisdom and courage during High Point's first serious labor strike, refusing to ask Governor Bickett to send militia, in the face of intense pressure designed to compel him to do so. The strike was finally settled without the loss of a single life.

For many years Dr. Stanton was a Director of the old Commercial National Bank and Chairman of its Examining Committee. He was also Vice President of the High Point Savings and Trust Company and a member of its Examining Committee for many years, and was one of its directors from the time of its organization until 1937. He is now President of the High Point Perpetual Building and Loan Association, and President and Director of Sherrod Shirt and Pajama Company. He served eight years on the first Board of School Commissioners in High Point, and was reappointed on the School Board in 1920, since which time he has been Treasurer of the Board. During the last World War he served as a special examiner for the local Draft Board in High Point, checking all defects found on the first examination of drafted men.

Few indeed, are the physicians of Guilford County who have had as long a career as Dr. Stanton; and none has had a life so full of many positions of honor and responsibility in so many fields. It is as physician, counselor and friend that we of the Guilford County Medical Society know him best. My early professional years spent in association with him are among my most treasured memories. He was to me what a preceptor was to the older generation of physicians now past and gone, and his rugged honesty, high professional ideals and ever helpful spirit have meant more to me than I can ever repay. He brought three of our children into the world, and many times gave unstintingly of his professional skill to the members of my family. There are many others here who owe him similar debts of gratitude.

I deem it not only an honor and a pleasure, but a rare privilege, to bring this testimony of appreciation to one who has meant so much to us all. In honoring him, we honor ourselves. So long as medicine has leaders and elder statesmen of the sterling character and idealism of Dr. David A. Stanton, she will keep the respect and confidence of the public.

Dr. Stanton: In the name of the Guilford County Medical Society, I salute you! The sunset of your life is aflame with the gorgeous colors of a rich full measure of devotion to your fellow men for over half a century of medical practice and civic service. May that sunset glow for many years yet!

INVAGINATION OF THE APPENDIX

A. Hinson, M. D.

Rock Hill, S. C.

Moschowitz(1) reported a case of intussusception of the appendix in 1910 and was able to find only twenty-four other cases in the literature. His patient was a forty-two year old male who had had symptoms for three and a half months before operation. He concluded that the condition was more common in the Anglo-Saxon race than among others, and that it occurred most often in the middle of the first decade of life. The pain is intense, cramp-like, and localized about the umbilicus. It is remitting in character, coming in paroxysms which are followed by periods of freedom from pain. These attacks occur two or three times a day, and in most of the cases symptoms had been present for a period ranging from a few weeks to several months. The condition is often complicated by intussusception of the colon, and a distinct mass can be felt in many cases. There are no diagnostic bowel irregularities.

Szenes(2) in 1922 reviewed fifty-five cases, which he classified into three groups according to completeness of invagination.

(1) Invagination of the appendix into itself.
(2) Complete or partial invagination of the appendix into the cecum.
(3) Involvement of deeper portions of the intestine, with invagination of the appendix into the cecum.

The condition occurs most often in healthy individuals with good muscular development. Two thirds of the cases were in males, and it is especially prevalent during the early ages. The appendix is usually thickened and edematous. The mucosa at the base is usually matted together and forms swollen, circular folds. Gangrene is rare, even in severe cases. A funnel-shaped attachment of the appendix to the cecum apparently predisposes to invagination. Some cases appear to be associated with a deficient development of Gerlach's valves. Szenes thought that appendicular muscle contraction is the cause of the invagination. He felt that precipitating factors are closure of the appendiceal opening by a fecalith or plug of

1. Moschowitz, Alexis V.: Intussusception of the Appendix, M. Rec. 78:1087 (December 17) 1910.
2. Szenes, A.: Invagination of the Appendix, Arch. f. klin. Chir. 119:88, 1922.

mucus, and protrusion of the mucosa by torsion of the appendix, causing acute or chronic inflammatory changes. Ascariasis plays a part in some cases.

These cases usually run a long, afebrile course. Examination reveals tenderness and rigidity in the right lower quadrant. In most cases there is invagination of the cecum, and only in those cases is a palpable mass present.

Operation is the treatment of choice. The appendix is disinvaginated and removed. If this can not be effected, a collar of cecum is removed along with the appendix. Several methods of reduction have been used:

(1) Incision of the cecum and disinvagination of the appendix.
(2) Incision of the cecum and excision of the appendix from within.
(3) Resection of the cecum and appendix *en masse*.

Mitchell(3) in 1931 collected approximately seventy cases from the literature.

Report of Case

D. D., a white male laborer, aged 33, was admitted to the hospital on February 4, 1940, complaining of pain in the right side, nausea and vomiting of twenty-four hours' duration. The patient stated that he had had cramp-like pains beginning forty-eight hours before in the right lower quadrant and just to the right of the umbilicus. He had had nausea and vomiting for the past six hours. Previously he had suffered with some gaseous eructations. Bowels had been regular.

Physical examination revealed a well developed, well nourished white male. His temperature was 98°; pulse, 90; blood pressure, 130/70. The only abnormal finding was tenderness in the right lower quadrant, with marked rebound tenderness. No masses could be felt. There was no rigidity. No hernias were present.

A urinalysis showed the specific gravity to be 1.022; there was an alkaline reaction, and a 1 plus reaction for albumin; sugar negative; acetone 4 plus; and an occasional leukocyte. The red cell count was 4,150,000, with 88 per cent hemoglobin. The white cell count was 10,500, with 94 per cent polymorphonuclears, and 6 lymphocytes. A Kahn test was negative.

Pre-operative diagnosis: Acute appendicitis.

Operation was performed under spinal anesthesia. The abdomen was opened with a McBurney incision. There was a tremendous amount of edema of the cecal wall, which in places was from 1 to 1½ inches thick. There was massive involvement of the pericecal fat. About one-fourth inch of the tip of the appendix protruded from a large, inflammatory mass which consisted of an appendix partially intussuscepted into the cecum. The protruding portion of the appendix was very tense, and there was marked induration of its mesentery. As attempts to reduce the intussusception were unsuccessful, a radial incision was made into the cecum and the appendix removed. There was a small perforation due to gangrene in the tip of the intussusception. The mesentery of the cecum and lower ileum was extremely long, so that the entire procedure could be performed extra-abdominally without soiling the peritoneum.

The postoperative course was uneventful except for a temperature of 103 on the third day, which promptly subsided. The patient was discharged as cured on February 15, 1940, eleven days after the operation.

Pathological examination: Grossly the appendix, with an attached margin of cecum, showed three very definite indentations on its outer wall, due to the pressure of the collar of cecum around the appendix and to pressure at the head of the invaginating mass.

Microscopically there was widespread edema with an infiltration of polymorphonuclear leukocytes. At the head of the intussusception there was necrosis and granulation. There was marked fragmentation of the muscle wall, undoubtedly due to edema with a loss of normal architecture.

Discussion: This is a case of partial invagination of the appendix into the cecum, complicated by an acute, suppurative appendicitis with gangrene and perforation at one point. The history in this case was not typical of appendicitis, but quite suggestive. No mass was palpated before operation. The smooth postoperative course was apparently due to the fact that the entire operative procedure was carried on outside the abdominal cavity, so that there was no soiling of the peritoneum.

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3. Mitchell, E. W.: Intussusception of the Appendix, Canad. M. A. J. 25:194 (August) 1931.

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JULY, 1940

THE A. M. A. MEETING

The ninety-first annual session of the American Medical Association was held in New York City June 10-14. Since most subscribers of the NORTH CAROLINA MEDICAL JOURNAL have the opportunity of reading a full account of this meeting in the *Journal of the A. M. A.*, any attempt to report it here would be superfluous. Moreover, it is so varied in its scope that only the well organized and well trained journalistic staff of the Association can report it in its entirety. Because of its great importance, however, it is in order to give in this journal some general impressions of the 1940 meeting.

The enrollment exceeded by far all previous records, with a total registration of 12,864. While the added attraction of the World's Fair doubtless increased the attendance, the crowded scientific meetings, section meetings, and scientific exhibits, the close attention paid, and the intelligent questions asked in the discussions showed that a majority of those present were there because they wanted to learn something. The very full attendance upon the meetings of the House of Delegates indicated that its members took their responsibility seriously.

One could not fail to be impressed by the efficiency and the cordiality of the New York Committee on Arrangements. With meticulous care every detail had been arranged for the meeting, and members of this committee were everywhere ready to give a helping hand where it was needed.

New York is badly handicapped as a convention city—certainly when it undertakes to entertain a convention as large as this one—by its lack of a suitable building, with a central auditorium capable of seating several thousand for the opening general meeting, with assembly rooms for the principal sections at least, and with ample space for registration and for both scientific and commercial exhibits on not more than two floor levels. In spite of this handicap, however, the superb hospitality of the New York doctors made such a profound impression that their cordial invitation to return in 1944 will doubtless be seriously considered.

Anyone attending his first meeting of the A. M. A. is apt to get the impression that the convention is so huge as to be unwieldy; but it is so well planned that he soon becomes oriented. The session formally opened on Tuesday night, when Dr. Rock Sleyster turned over the President's gavel to Dr. Nathan B. Van Etten, who then gave his inaugural address on "Better Health for America". An hour's preliminary concert of really beautiful music was rendered by the Doctors' Orchestral Society of New York. Dr. Van Etten's address is given—and deserves—first place in the *Journal of the A. M. A.* for June 15.

Before the formal opening, however, general scientific meetings were held in the Grand Ballroom of the Waldorf-Astoria on Monday and Tuesday, and in the Commodore Hotel on Tuesday. From Tuesday through Friday the fifteen sections of the Association held their meetings in various hotels of the city. In these sessions formal papers were read and discussed. The scientific and commercial exhibits were held in the Grand Central Palace. The doctor who wants to get the most good from the session as a whole had best spend most of his time in the scientific exhibits, where he can talk freely and informally with men who are recognized authorities in their fields, and who have gone to much trouble and expense to give graphically the results of months or years of patient research. The papers can be found later in the *Journal of the A. M. A.*, but the exhibits can not.

The commercial exhibits are also well worth some time. Here the very latest in books, in instruments, and in biological and chemical preparations are on display.

The House of Delegates had a busy but unusually harmonious series of meetings. The amount of business dispatched by this body is really amazing—especially in view of the absolutely democratic methods that prevail. This body is a living refutation of the often-heard statement that democracy and efficiency are incompatible. Following the address of Speaker H. H. Shoulders on Monday morning, the President and the President-Elect each addressed the House. Then the Secretary, the Board of Trustees, the Treasurer, and the "Standing and Special Committees" gave their reports. After this, various resolutions were introduced as new business. The House adjourned until next morning, in order to give the Reference Committees time to function.

The Tuesday morning and afternoon meetings were given over chiefly to the reports of the Reference Committees. The most important action taken, and the one that overshadowed all others in interest, was the adoption of a resolution pledging the resources of the A. M. A. to the Federal government for national defense. A committee consisting of ten members of the House and five *ex officio* members from the A. M. A. officials was appointed, with Dr. Irvin Abell as chairman, to cooperate with the proper authorities of the federal government in carrying out the purpose of this resolution.

The election of officers, held at the final meeting on Thursday afternoon, was remarkable for its harmony. There was not a single contest, every candidate nominated being elected by acclamation. Dr. Frank Lahey, of Boston, was made President-Elect; Dr. Parke G. Smith, of Cincinnati, Vice-President; and Dr. William F. Braasch, of Minneapolis, member of the Board of Trustees to succeed the late Dr. Charles B. Wright. Dr. Herman G. Weiskotten, of Syracuse, was elected to the Council on Medical Education and Hospitals, to succeed Dr. Lahey. The only balloting necessary was to select the place of meeting for 1943. San Francisco, St. Louis, and Detroit all extended invitations, but San Francisco was chosen. Cleveland and Atlantic City have already been selected for 1941 and 1942 respectively.

North Carolina was allotted a third delegate for the next three years. Four states gained a delegate and four lost one this year. Because the membership of the A. M. A. has increased to more than 117,000, and because the constitution allows the House only 175 members, it was necessary to raise the ratio of state membership per delegate. Accordingly, the Apportionment Committee, headed by Dr. A. T. McCormack, of Kentucky, agreed to allow one delegate for each 930 members, or fraction thereof. North Carolina's membership for 1939 was recorded as 1867.

The predominant impression that most of us carried away from the meetings was that of the absolute solidarity of the American Medical Association. This feeling of unity pervaded the atmosphere like the theme of a symphony. The persecution endured for more than five years by the doctors of America has brought them together as nothing else could have done.

* * * *

DR. PAUL McCAIN HONORED

Last month this journal recorded with pride the award of the Kober medal to Dr. William MacNider. This month it takes just as much pride in pointing to another signal honor bestowed upon a North Carolina physician. Dr. Paul McCain, Superintendent of the North Carolina Tuberculosis Sanatorium, was elected President of the National Tuberculosis Association at its annual meeting in Cleveland, June 3-7. One who was present related that the most gratifying feature of Dr. McCain's selection was the fact that it came absolutely without any political pressure, as a spontaneous recognition of his great ability. That was the manner of his selection as President of the Medical Society of the State of North Carolina. Those who know him best know that he would not have had it otherwise.

Among North Carolina doctors Dr. McCain is frequently referred to as the best loved doctor in the state. His friends, both medical and non-medical, are happy to have his sterling worth recognized by those who are best fitted to pass judgment on his merit.

THE A. M. A. AND THE FEDERAL GOVERNMENT

At the New York meeting last month, the House of Delegates of the American Medical Association unanimously adopted a resolution pledging the full cooperation of the organization to the Federal Government and creating a committee "to make available at the earliest possible moment every facility that the American Medical Association can offer for the health and safety of the American people and the maintenance of American democracy."

Accustomed as physicians are to answering the call of duty whenever it comes, without pausing to consider the past conduct of the one in need, it was quite natural for this action to be taken. However, one cannot help wondering if, when the Federal Government accepts this offer and invites the Committee for a conference, it may not feel a little embarrassed to find that several of the fifteen Committee members have been indicted by the Government's Department of Justice. Will the Federal Government care to confer with men charged with the commitment of a crime? If the suit now pending against them is won by the Arnold henchmen, will the Government give them a suspended sentence for the duration of Hitler's war?

Another thought that will not down: If the United States gets into the present World War it will be to defend the freedom of the individual against the tyranny of the totalitarian state; and the socialization of medicine has been the entering wedge for totalitarianism in Germany and Russia.

* * * *

THANKS TO INDIANA

The editorial, "As Others See Us", in the May issue of this magazine, was not intended to include *all* the welcoming messages carried by other state journals. One greeting that was inadvertently omitted, however, meant so much that it is reproduced in part now. It appeared in the March issue of the *Journal of the Indiana State Medical Association*, of which Dr. E. M. Shanklin is the capable editor, and Miss Hope Toman the very observant assistant editor. To our Indiana friends the NORTH CAROLINA MEDICAL JOURNAL extends its thanks and appreciation, as sincere and heartfelt as they are belated, for the following words of welcome:

"Volume 1, Number 1 of the *North Carolina Medical Journal* came to our desk on schedule time in January. This latest addition to the long list of state medical magazines shows much promise. The first number is of good size and carries ten original articles and three case reports. The publication is under the direction of an editorial board of seven members with Dr. Wingate M. Johnson, of Winston-Salem, as editor . . . The magazine is well printed on an excellent quality of paper and presents a pleasing appearance. We welcome this new member of our growing family and feel assured that . . . it will assume a responsible place in American medical literature."

* * * *

DR. DAVID RIESMAN

The hearts of many doctors in North Carolina, and in perhaps every state in the Union, were saddened by the brief message sent out from Philadelphia on June 3: "Dr. Riesman died this morning." Those privileged to have had Dr. Riesman as a teacher —whether they were students, interns, or residents—feel a personal loss. It is hard to imagine a hospital chief more nearly ideal than he. Always courteous, always patient, he treated his interns and residents as professional equals. They were expected to examine patients as soon as possible after admission, to make diagnoses, and to outline treatments. When Dr. Riesman made rounds, he would point out mistakes with the same tact he would use in a consultation. Treatments were not changed unless necessary, and then by suggestion rather than command.

After they left the shelter of the hospital and began practice for themselves, numbers of Dr. Riesman's "boys" formed the habit of writing him or calling on him in person for advice about patients, or about their personal problems. Few would think of revisiting Philadelphia without seeing him.

It is unnecessary to recount his professional attainments. His record is too well known. These few words are merely an effort to pay tribute to the warm human personality of the man, David Riesman.

CASE REPORTS

MIDDLE MENINGEAL HEMORRHAGE

Case Report

PAUL MCBEE, M. D.
MARION

Fractures of the cranium, in so far as the bone injury is concerned, are not usually important, but the immediate or remote results upon the cranial contents may be devastating. We should never lose sight of the fact also that very grave injuries to the brain and meninges may be inflicted without any sort of fracture and often by apparently trivial accidents which may not even be severe enough to produce unconsciousness at the time.

The treatment of most patients with acute head injuries should be conservative. Only a few require surgery, and none of them should be operated upon while they are in shock, except as it may be necessary to control severe bleeding.

This paper is intended to present a specific type of acute head injury and to report one case in point.

The middle meningeal artery is the most frequent source of extra-dural hemorrhage. It is a branch of the internal maxillary and enters the cranium through the foramen spinosum. This artery lies between the skull and the dura. It is lodged in bony grooves and is adherent to the dura. It is easily torn by direct or by indirect force, with or without a fracture of the skull. The thinness of the bone at this point predisposes to this injury, and the loose attachment of the dura permits the formation of a large clot rather quickly.

The three most characteristic symptoms of middle meningeal hemorrhage are: (1) dilatation of the pupil upon the side of the hemorrhage; (2) a gradual onset of coma, either with or without an early lucid interval; and (3) the presence of signs of motor weakness on that side of the body opposite the dilated pupil. Dilatation of the pupil on the side of the hemorrhage has not been stressed sufficiently. The enlarging hematoma gradually dissects its way between the dura and the bone, and extends forward and medially into the middle fossa, where it makes pressure upon the oculomotor nerve.

A fracture line extending across the groove which lodges the middle meningeal artery would help establish the diagnosis. These patients usually do not have severe primary injuries, and they are not usually in shock.

Case Report

A boy fifteen years old was admitted to the McBee Clinic on April 4, 1939, at 8:00 p. m. He complained of headache, nausea and vomiting. He was rational, his vision was good, his memory excellent, and his reflexes normal. He stated that at 5:00 p.m. of the same day, while he was playing with another boy ten years old, the smaller boy became angry and threw a rock which struck him in the right temple. The force of the blow was not sufficient to knock him down. He walked about a hundred yards to his home and went to bed. After about two hours he became nauseated and his parents brought him to the hospital.

Antero-posterior and bilateral x-rays failed to show any skull fracture. Hospitalization was advised for observation and the patient put to bed. The night nurse was instructed to watch for unusual restlessness, loss of consciousness, changes in the pupils, or paralysis. At 2:00 a.m. she called me and reported that the patient had become comatose, had suffered three light convulsions, and that the left arm and leg appeared to move very poorly when he stirred about in bed. She also reported that the right pupil had become widely dilated. I confirmed all of her findings and found that there was almost complete paralysis of the left arm and leg. I made a diagnosis of middle meningeal hemorrhage on the right side and informed the patient's father and mother that an immediate operation would be necessary.

Under local and evipal anesthesia a trephine opening was made through the skull just above the middle of the right zygoma. As soon as the button of bone was raised a clot bulged through the opening. This trephine opening was enlarged by taking bites with a rongeur until a good view of the middle fossa could be obtained. The clot was gently removed and the middle meningeal artery was secured by means of a suture ligature of fine catgut just above the

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Presented to The Thermal Belt Medical Society at Marion, April 18, 1940.

foramen spinosum. Additional ligation of the branches of the artery at five points distally was necessary to control reflux bleeding, since these branches had been torn across. (All this damage was done without a fracture and without even knocking the patient down.) The scalp incision was closed by layers and the patient put back to bed.

The partial paralysis of the left arm and leg cleared up almost immediately. The patient made a nice recovery and left the hospital on the seventh day. He is perfectly well at the present time.

CLINICO-PATHOLOGICAL CONFERENCE

City Memorial Hospital

Winston-Salem

Mr. R. J. W., a white male, forty-four years old, was admitted to the hospital on April 19, 1940, complaining of asthma.

The patient's present illness began four years ago. Previous to this he had been in good health. At this time he began to have attacks of what he called asthma. This was apparently quite severe, and during this period of four years he had lost sixty to seventy pounds in weight. He got along fairly well until three months before admission when "his heart gave out" and nothing that he did would give him relief. His family history was not contributory.

Physical examination revealed an extremely emaciated man who appeared very ill. The veins of the arms, neck, legs and abdomen were extremely engorged, and the venous pressure was estimated to be 30-40 cm. of water. This was estimated by elevating the patient's arms above his heart, and noting when the veins collapsed. His chest showed a moderate increase in anterior-posterior diameter. Hoover's sign—retraction of the lower costal margins on inspiration—was present. His chest was hyper-resonant throughout and the breath sounds asthmatic. The blood pressure was 110 systolic and 80 diastolic; the pulse 140 and regular. There was moderate enlargement of the heart to the right but none to the left. No murmurs were present. The liver was felt well beyond the costal margin, but was not considered enlarged. No edema was present and no fluid was detected in the abdomen or pleural cavities. There was marked cyanosis of the skin and finger nails. There was great expiratory difficulty. No laboratory work was done on this patient. The temperature on admission was 101.6°F., the respirations 36, and the pulse, 126. Two hundred cubic centimeters of blood were withdrawn from a vein immediately after the patient was admitted. Soon after admission the patient's respirations became shallow and gasping, his pulse imperceptible and his heart sounds extremely weak and so fast that they could not be counted. Shortly before death his blood pressure fell to 30, systolic, and no diastolic reading could be obtained.

Clinical Discussion

This patient presents a history of asthma for four years and a history of inadequate heart action for the past three months. When he was seen in the hospital the most outstanding things were the cyanosis, respiratory difficulty and the extreme engorgement of the veins. Hoover's sign indicates depression of the domes of the diaphragm and is a common finding in severe emphysema. I think the interpretation of the clinical findings in this case is relatively easy. We may consider that the patient had asthma with fibrosis of the capillary pulmonary bed and resulting right heart failure due to the increased resistance through the pulmonary circulation. The right heart failure is definitely indicated by the cyanosis and the marked venous engorgement of the peripheral vessels. My diagnosis therefore is:

Asthma
Cor pulmonalis
Right heart failure

Question by Dr. A.: Did this patient have an asthma of the type that we usually associate with hay fever, and develop his emphysema and right heart failure following this, or was the asthma secondary to a chronic pulmonary emphysema?

Answer: This patient had asthma, but I don't believe it is the type that would be associated with spasm of the smooth muscle of the bronchioles, eosinophilia and so on. I think that the primary lesion in the lungs was a diffuse fibrosis of the capillary bed.

Clinical Diagnosis

1. Asthma
2. Heart failure
3. Cor pulmonalis

Post-Mortem Diagnosis

Hyperthrophy and dilatation of right side of heart
Cor pulmonalis
Chronic pulmonary emphysema
Severe passive congestion of lungs, liver and spleen
Edema of lungs
Coronary sclerosis
Cirrhosis of liver

Pathological Discussion

At autopsy the findings were much as have been indicated in the clinical presentation of the case. There was a moderate increase in the anterior-posterior diameter of the chest and there was a marked emphysema in the lungs, which in the apices of the upper lobes was bullous in type. The domes of the diaphragm were markedly depressed, the right being at the sixth interspace in the midclavicular line and the left at the seventh rib. The heart weighed 340 grams. The left ventricle was 13 mm. in thickness, which is approximately normal, but the right ventricle was 6 mm. thick, which is at least twice normal. The right ventricle was greatly dilated, so that the hypertrophy of the right ventricle is greater than that indicated by the measurement of the thickness of the muscle. There was a moderate degree of coronary sclerosis with only a moderate reduction in size of the lumina of the main vessels. There was no scarring of the heart muscle. The liver was not enlarged, and its presence in the abdomen was due to its being pressed downward by the greatly enlarged lung. The liver was yellowish-brown and grossly nodular, and the section showed a typical atrophic cirrhosis. The other organs were not unusual. Microscopic sections of the lung showed a very severe emphysema with destruction of a large number of the alveolar walls and marked thinning of the remaining ones. The bronchi did not show the changes usually found in asthma, which are a hypertrophy of the entire thickness of the muscular walls and cellular infiltration, with mononuclear eosinophils prominent. There was, however, a mild catarrhal bronchitis which is quite common in chronic pulmonary emphysema. This is the type of emphysema which is observed in persons with chronic bronchitis, asthma, chronic pulmonary tuberculosis, and in workers in irritant dusts and gasses. However, it is not more common in glass blowers and wind instrument players than in the general population(1). It may also result from obstruction in the nose and upper respiratory tract and may occur in association with kyphosis and large abdominal tumors. It occurs most commonly in middle-aged males. It is to be differentiated from the small lung type of emphysema occurring in aged individuals and due primarily to senile atrophy of the alveolar walls. The etiology of the emphysema in the present case is not apparent either from the history or from the autopsy findings.

In summary, this patient had a severe chronic pulmonary emphysema which interfered with the pulmonary circulation. This resulted in hypertrophy of the right heart and eventually in right heart failure with the clinical picture of extreme cyanosis and venous congestion. The cirrhosis of the liver is not related to the pulmonary emphysema.

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1. Loeschke, H.: Storungen des Luftgehalts (of the Lungs), in Henke, F., and Lubarsch, O.: Handbuch der speziellen pathologischen Anatomie, etc., Berlin, 1928, vol. 3, p. 599.

INTUSSUSCEPTION

W. E. Keiter, M. D.

Kinston

Intussusception is so infrequent that even among those of us who limit our work to infants and children several years may elapse between cases. The following case is reported because it demonstrates the advantages of prompt recognition of this pediatric emergency and the consequent application of conservative treatment.

H. M., a white male, aged nineteen months, was brought into the office of Drs. F. W. Carroll and Earl Dawson of Hookerton, N. C., on March 20, 1940, with the following history:

About twenty minutes earlier the child had been seized with a severe pain in the abdomen, doubling him up. He vomited promptly and became very pale, breaking out into a cold sweat. He was prostrated and limp. The parents rushed him to the doctors' office.

When first examined by them he was obviously quite shocked. The abdomen was flat and soft. A tumor was visible in the right lower quadrant. On palpation the tumor was found to be sausage-shaped and about 4 by 8 cm., hard in consistency, quite tender, slightly mobile and apparently attached to the posterior abdominal wall.

Drs. Carroll and Dawson agreed on a diagnosis of intussusception and sent the child to the Memorial General Hospital. He was in our care probably within an hour of the onset. Our findings were identical with those above, and we attempted to reduce the intussusception with a barium enema. The report of the roentgenologist was as follows:

> "Except for considerable redundancy of the large bowel in the region of the sigmoid, the roentgen examination of the colon by the barium enema disclosed no evidence of any abnormality distal to the hepatic flexure. At this point the progress of the enema was abruptly stopped and the appearance of an inverted cupola was seen for a short interval. The point at which the barium flow was interrupted coincided with the mass that could be palpated clinically. With a little more distension of the bowel there was a sudden relaxation and passage of the barium into the ascending colon. Practically at the same time there was relaxation of the anal sphincter and the greater part of the barium in the distal bowel was evacuated. It was noted at once that when the obstruction was released and barium entered the ascending colon, the palpable mass disappeared.
>
> "Conclusions: The fluoroscopic examination of the large bowel shows typical findings of intussusception and reduction thereof during the period of examination.
>
> L. W. Oehlbeck, M.D."

Following reduction the child was relieved of all discomfort, and his appearance changed accordingly. He was kept in the hospital over night for observation and took liquids freely. He was discharged the next morning, apparently well.

(While Dr. Keiter and his colleagues are to be congratulated upon their prompt recognition and relief of this serious emergency, it should be remembered that such dramatic response to an enema is not usual. The consensus of pediatric opinion is that surgery is the treatment of choice in most cases of intussusception that persist for more than a few hours.—Ed.)

BULLETIN BOARD

PRESIDENT'S MESSAGE

The period of Idealism in our national affairs and in our relationship with other nations of the world has come to an acute crisis. We are faced with an era of stark Realism, with the grim specter of war not beyond the bounds of our horizon.

The President, the Council, and the officials of our national organization, the American Medical Association, ask that we as a constituent unit of this society start the formation of a medical preparedness program. The first step is the appointment of a chairman to whom will be delegated authority to plan for a general organization of our profession for military, naval, public health, and general medical service. It seems appropriate that the President of our State Medical Council, who under our charter is the President-Elect of the State Medical Society, should be asked to serve in this capacity. Dr. Webb Griffith, President-Elect, will be asked to lend his energy, strength, and organizing ability to this task.

The same spirit which actuated our people in 1776 to join in with twelve other colonies in the defense of their liberties is alive today. Our great opportunities in life today are founded on their sacrifices. History teaches us that the bitter humiliation of defeat comes to those who are not prepared to meet the aggressor. Maps of the world are being changed, history is being made, nations are being enslaved, and what we like to call the culture and civilization of a thousand years of man's best physical and intellectual effort are being destroyed by a despotic Nazi dictator. Should we not individually and collectively take stock as to how we may best serve our country in this crisis, which may reach our shores at an early date?

Organization under the leadership of an able man will coordinate our efforts so that we may be a potent unit in the preparedness program for the defense of our homes, our lives, and our liberty.

HUBERT B. HAYWOOD, M.D.

NEWS NOTES FROM THE MEDICAL SCHOOL OF THE UNIVERSITY OF NORTH CAROLINA

The Board of Trustees of the University of North Carolina at its June meeting unanimously approved the change in status of the Division of Public Health to a School of Public Health, with Dr. Milton J. Rosenau as the first Dean of the School.

* * * *

The School of Public Health of the University of North Carolina has entered into a cooperative arrangement whereby members of its faculty will teach public health and preventive medicine at the Bowman Gray School of Medicine of Wake Forest College in Winston-Salem, beginning in 1942.

* * * *

Dr. W. C. George has been made Head of the Department of Anatomy, succeeding the late Dr. C. S. Mangum.

* * * *

Dr. C. D. Van Cleave, formerly of the Department of Anatomy at Cornell University School of Medicine, has been appointed Assistant Professor of Anatomy, beginning September 1, 1940.

* * * *

Dr. Wm. deB. MacNider has resigned as Dean of the Medical School in order to devote his time to research and teaching. His resignation becomes effective July 1. Dr. W. R. Berryhill, Assistant Dean for the past two years, will be Acting Dean of the School until a permanent dean is selected.

NEWS NOTES FROM DUKE UNIVERSITY SCHOOL OF MEDICINE AND DUKE UNIVERSITY SCHOOL OF NURSING

On May 23, Dr. Mark V. Ziegler, Assistant Surgeon, U. S. Public Health Service, lectured to the students on "Opportunities in the Public Health Service".

* * * *

In the autumn quarter, 1939, the Duke Medical Historical Society was organized by the students of the School of Medicine, with eighteen members. Meetings are held every two weeks and, at each meeting, one of the members, or a guest speaker, discusses some phase of medical history.

* * * *

At the Commencement exercises, held June 3, there were fifty-eight candidates for the degree of Doctor of Medicine, five for the degree of Bachelor of Science in Medicine, twenty-one for the diploma in Nursing, and nineteen for the degree of Bachelor of Science in Nursing. The following seniors in the School of Medicine were elected to Alpha Omega Alpha Honorary Fraternity: I. W. Brown, Jr., R. Brown, J. W. Kelley, G. H. Kostant, R. W. Rundles and W. L. Venning, Jr. The following seniors in the School of Nursing received Honors: Margaret Allan, Carl D. Bryant, Antoinette G. Makely and Elizabeth H. Wilkinson. James W. Kelley, recommended by the Department of Surgery, received a year's subscription to Surgery, and H. Grant Taylor, recommended by the Department of Pediatrics, received a year's subscription to the Journal of Pediatrics, as scholarship awards from The C. V. Mosby Company.

BUNCOMBE COUNTY MEDICAL SOCIETY

At the first June meeting of the Buncombe County Medical Society, held on June 3, Dr. George F. Baier, Jr., read a paper entitled "Why the Coroner?" On June 17 Dr. Otto Billig spoke on "Insulin Shock and Sub-Shock Treatment in Mental Disease".

CALDWELL COUNTY MEDICAL SOCIETY

The Caldwell County Medical Society held a dinner meeting at the Carlheim Hotel Wednesday evening, May 29, at 7:00 p.m., with Dr. F. M. Dula as host. After dinner a business meeting was held, and following this a short program was presented. Dr. C. R. Hedrick, delegate to the State Society meeting, gave his report, and two films were shown. These films, "The Biology of Conception" and "The Mechanism of Contraception", were obtained from the Birth Control Federation of America, and were very scientific and instructive.

Douglas Hamer, M. D.,
Secretary.

FORSYTH COUNTY MEDICAL SOCIETY

The Forsyth County Medical Society met at the City Memorial Hospital, Winston-Salem, on June 18. Dr. John Elliott of Salisbury spoke on "The Use of Plasma as a Substitute for Whole Blood".

MECKLENBURG COUNTY MEDICAL SOCIETY

The Mecklenburg County Medical Society held its last meeting of the summer on June 4. Dr. J. Stuart Gaul gave a paper on "Conditions of the Hip Joint", and Dr. Elias Faison spoke on "The Jewish Race and Its Health History".

NEWS NOTES FROM THE NORTH CAROLINA TUBERCULOSIS ASSOCIATION

Dr. Paul P. McCain was elected President of the National Tuberculosis Association at its annual meeting in Cleveland, June 3-7. This is the highest honor to be accorded in the nation in the field of tuberculosis, and it comes in recognition of the distinguished services of Dr. McCain.

* * * *

Walter S. Page, Jr., will serve the North Carolina Tuberculosis Association as field worker beginning July 1.

* * * *

Fourteen North Carolinians attended the joint meeting of the National Tuberculosis Association and the American Trudeau Society. They were: Dr. Paul McCain and Dr. F. T. Harper, State Sanatorium; Dr. and Mrs. R. L. Carlton, Winston-Salem; Dr. and Mrs. P. A. Yoder and Dr. Florence J. Coughlin, Forsyth County Sanatorium; Dr. Paul Ringer, Asheville; Dr. S. M. Bittinger and Dr. H. E. Wood, Western North Carolina Sanatorium; Dr. H. L. Seay, Mecklenburg County Sanatorium; Dr. M. D. Bonner, Guilford County Sanatorium; Dr. David T. Smith, Duke University; and Frank W. Webster, Winston-Salem.

* * * *

The meeting of the Southern Tuberculosis Conference will be held in Monroe, La., on October 21, 22, and 23.

* * * *

Dr. Charles E. Lyght, Chairman of the Tuberculosis Committee of the American Student Health Association, reports a gradual but steady increase in institutions participating in tuberculosis case-finding. In 1938-39 the number of schools with such a program was 165, while during the preceding year there were only 133 schools.

* * * *

Dr. Philip P. Jacobs, Director of Personnel Training and Publications of the National Tuberculosis Association, and a pioneer in the field of health education, died on June 12, at the age of 61.

NEWS NOTES FROM THE STATE BOARD OF HEALTH

There were 32,471 babies born in North Carolina during the first five months of 1940, which was 712 more than were born during the corresponding period in 1939, and 18,049 in excess of the 14,422 deaths reported so far during the present year.

Deaths through May, this year, numbered 812 more than the 13,610 reported for the corresponding period of 1939.

Through May, 1940, there were 2,075 deaths in North Carolina among children under a year old, compared with 1,926 the first five months of 1939, while the total number of maternal deaths was 188, just 19 more than occurred during the corresponding period in 1939.

Deaths from preventable accidents—543—numbered just 20 more than the 523 through May, 1939. The 1940 homicide total is five more than the 1939 total, so far.

Suicides are up in 1940, with 141 as compared with 115 the corresponding period in 1939.

SYMPOSIUM ON OBSTETRICS AND PEDIATRICS

A symposium on obstretrics and pediatrics, sponsored by the Maternal and Child Health Service of the State Board of Health and the Postgraduate Committee of the North Carolina Medical Society, was held at Roaring Gap, June 16 and 17. The following program was presented:

Evening Session—June 16—8 P. M.

Dr. Wilburt C. Davison, Durham, Presiding

"Prematurity"—Dr. Julius H. Hess, Chicago

"Albatio Placentae"—Dr. Bayard Carter, Durham

Morning Session—June 17—9 A. M.

Dr. Leroy J. Butler, Winston-Salem, Presiding

"Diarrhea"—Dr. J. Labruce Ward, Asheville

"Pelvimetry"—Dr. W. Z. Bradford, Charlotte

"Preventive Pediatrics"—Dr. George W. Kutscher, Asheville

"Placenta Previa"—Dr. T. Leslie Lee, Kinston

Afternoon Session—June 17—2 P. M.

Dr. Paul W. Johnson, Winston-Salem, Presiding

"Bronchiectasis in Childhood"—Dr. Julius H. Hess, Chicago

"Toxemia of Pregnancy" — Dr. W. Z. Bradford, Charlotte

"Infant Feeding"—Dr. Leroy J. Butler, Winston-Salem

"Caesarean Section"—Dr. T. Leslie Lee, Kinston

Troy, N. C.
May 16, 1940.

Dr. T. W. M. Long
Roanoke Rapids, N. C.

Dear Dr. Long:

As mail continues to come for Dr. Thompson, I am writing to ask if you will please make the following announcement in one of your medical meetings or send it to the state medical journal.

> Dr. A. F. Thompson died February 16, 1936, in Charlotte Sanatorium of injuries received in an automobile wreck.

If you will attend to this matter, I shall appreciate it greatly.

Yours very truly,
Mrs. A. F. Thompson.

PAN-AMERICAN CONGRESS OF OPHTHALMOLOGY

Plans for a Pan-American Congress of Ophthalmology to be held at the Hotel Cleveland, Cleveland, Ohio, October 11-12, have been announced.

The congress will be sponsored by the American Academy of Ophthalmology and Otolaryngology, an organization of more than 2,500 specialists in diseases of the eye, ear, nose and throat, which will hold its annual convention immediately preceding the Pan-American gathering.

The U. S. Department of State has expressed its interest and the governments of all the countries of the Western Hemisphere have been invited to send official delegates. It is felt that the meeting will do much toward bringing about an entente cordiale among scientific men of the two Americas, and it is expected that a permanent organization will be effected.

The committee that is developing the congress has the following members: Drs. Harry Gradle, Chicago; Conrad Berens, New York, and Moacyr E. Alvaro, Sao Paulo, Brazil. The executive secretary of the American Academy of Ophthalmology and Otolaryngology, which will be host to the Latin-American eye specialists, is Dr. William P. Wherry, 1500 Medical Arts Building, Omaha, Nebraska.

Under the direction of Dr. Berens, papers in Spanish or Portuguese will be made understandable to English speaking ophthalmologists by the use of lantern slides projecting a synopsis of each paragraph translated into English. The reverse process will be used with the English papers. Spanish and Portuguese stenographers will be present to record the discussions in the language of the authors.

The congress is open to any ophthalmologist who wishes to register. Non-members of the Academy of Ophthalmology and Otolaryngology may register regardless of attendance at the Academy meeting proper. Individual invitations have been sent to about 1,800 members of the ophthalmologic profession in the Latin-American countries, as well as to the national societies of eye specialists and the universities. Individual invitations were not sent to ophthalmologists in the United States and Canada, but official invitations to them are being printed in the various journals of ophthalmology. A fee of $5 has been set for membership in the congress.

Among the guests expected for the congress is Dr. Manuel Marquez y Rodriguez, for many years a prominent eye specialist, teacher and writer in Madrid and now living in Mexico City.

NEWS NOTES

Archie A. Barron, M.D., announces the opening of a Neuro-Psychiatric Institute in Charlotte for the diagnostic study and interpretation of nervous symptoms.

* * * *

Dr. Thomas H. Byrnes, formerly pathologist to Watts Hospital in Durham, became associated with Dr. Lester C. Todd in the practice of pathology and allergy in Charlotte on June 1.

COURSE IN ELECTROCARDIOGRAPHY

The Cardiovascular Department of Michael Reese Hospital, Chicago, offers a two weeks' course in electrocardiography from August 19 to August 31 by Dr. Louis N. Katz, Director of Cardiovascular Research. The fee for the course is $100.00.

EXAMINATIONS
AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY

The next written examination and review of case histories (Part I) for Group B candidates will be held in various cities of the United States and Canada on Saturday, January 4, 1941, at 2:00 p.m. Candidates who successfully complete the Part I examinations proceed automatically to the Part II examinations held later in the year.

Applications for admission to Group B, Part I, examinations must be on file in the Secretary's office not later than October 5, 1940.

The general oral and pathological examinations (Part II) for all candidates (Groups A and B) will be conducted by the entire Board, meeting at Cleveland, Ohio, immediately prior to the 1941 meeting of the American Medical Association.

After January 1, 1942, there will be only one classification of candidates, and all will be required to take the Part I and Part II examinations.

For further information and application blanks, address Dr. Paul Titus, Secretary, 1015 Highland Building, Pittsburgh, (6) Pennsylvania.

Paul Titus, Secretary.

WOMAN'S AUXILIARY

OFFICERS

President: Mrs. Clyde R. Hedrick, Lenoir.

President-Elect: Mrs. Sidney Smith, Raleigh.

First Vice President (Organization): Mrs. C. F. Strosnider, Goldsboro.

Second Vice President (McCain Bed): Mrs. F. M. Hauser, Cherryville.

Third Vice President (Loan Fund): Mrs. J. S. Hooker, Chapel Hill.

Chairman of Past Presidents: Mrs. P. P. McCain.

Corresponding Secretary: Mrs. W. G. Byerly, Lenoir.

Treasurer: Mrs. E. C. Judd, Raleigh.

Recording Secretary: Mrs. J. D. Freeman, Wilmington.

COUNCILLORS

First District: Mrs. H. D. Walker, Elizabeth City.
Second District: Mrs. John Winstead, Greenville.
Third District: Mrs. J. S. Brewer, Roseboro.
Fourth District: Mrs. M. A. Pittman, Wilson.
Fifth District: Mrs. W. T. Rainey, Fayetteville.
Sixth District: Mrs. Ben Lawrence, Raleigh.
Seventh District: Mrs. Harry Winkler, Charlotte.
Eighth District: Mrs. Wm. P. Knight, Greensboro.
Ninth District: Mrs. James W. Vernon, Morganton.
Tenth District: Mrs. S. M. Bittinger, Black Mountain.

ORGANIZATION REPORT

For the Year Ending May, 1940

Woman's Auxiliary to the Medical Society of the State of North Carolina

Total number of County Auxiliaries..........15

One Auxiliary, Wilkes-Allegheny, is composed of two counties.

New Hanover, Brunswick and Pender are reported combined.

Craven County Auxiliary was organized this year.

Randolph County Auxiliary, reported in May, 1939, as organized, has disbanded, as far as can be ascertained, because of its very small number of members and consequent lack of interest.

Number of members at large May 8, 1940..........153

Total paid up membership May 20, 1939..........423

Total paid up membership May 20, 1940..........605

Time and place of meeting May 14, 15, 16, at Pinehurst, N. C.

Number of doctors in organized counties..........508

Probable number of eligible doctors' wives in organized counties..........405

MRS. JOSEPH A. ELLIOTT,
Chairman of Organization.

ANNOUNCEMENT

The NORTH CAROLINA MEDICAL JOURNAL has allotted a section in each month's issue to the Auxiliary to the Medical Society of the State of North Carolina. We are asking you as doctors' wives to keep up with our State Auxiliary through these columns. We want every county medical auxiliary in North Carolina to be duly recognized. In order to attain this goal, we are asking each county auxiliary to appoint a Press and Publicity chairman, whose duties will be to report immediately to me any county auxiliary activities. Included in this information should be the date and place of meeting, the subject discussed, the speaker, and any other points of interest.

May I hear from every county medical auxiliary during the period I serve you?

MRS. ALFRED A. KENT, JR.,
Chairman, Press and Publicity Committee.

Granite Falls, N. C.

BED AT WESTERN SANATORIUM

It might be of interest to the doctors and doctors' families of North Carolina to know that at the annual meeting of the Auxiliary a motion was made and carried that a bed be maintained at the Western Sanatorium at Black Mountain. This bed will be under the same supervision as the present McCain bed at Sanatorium, N. C. Mrs. James Vernon, Mrs. Alfred Kent and Mrs. S. M. Bittinger were appointed as a committee to name this bed.

In Memoriam

JOSHUA FANNING ABEL

1868-1938

By E. W. Gudger, Ph.D.

Joshua Fanning Abel was born near Bethel in the upper Pigeon Valley, Haywood County, in 1868. He attended Waynesville Academy for two years and Weaverville College for two years. After teaching in country schools for a while, he "read medicine" with Dr. J. N. Mease at Ford of Pigeon (now Canton), preparatory to going to medical school in 1890. His medical training was had in Baltimore University Medical School, from which he was graduated as an M.D. in 1892. In his senior year he took special work in surgery at the newly founded Johns Hopkins Medical School. Here his work so commended him to Dr. William H. Welch that he offered Dr. Abel an internship in surgery in the Johns Hopkins Hospital. However, for financial reasons Dr. Abel had to decline this offer.

He returned to Canton in 1893 to take up his life work of caring for the sick in his native county of Haywood. In 1900 he moved to Waynesville, where he was to spend the remainder of his life. Here, in those horse-and-buggy days, he practiced medicine and surgery over almost all of Haywood County.

During the World War Dr. Abel served for sixteen months in the training camp at Fort Oglethorpe, Georgia. When he was retired as a Major in the Medical Reserve Corps after the Armistice, he came home to begin again his life work among his own people.

In January, 1919, Dr. Abel was put in charge of Waynesville's first hospital—an ill equipped wooden building which had been converted from a hotel. He bought supplies, chose the staff, and practiced general surgery and general medicine. Even with the poor equipment that he had, he gave such service as Haywood County had never seen before. In 1925 he helped launch the campaign for a new building, and when the new Haywood County Hospital was opened on January 1, 1928, Dr. Abel was made chief of staff. However, he resigned shortly to give his whole time and strength to his work with his patients out of the hospital as well as in it.

Dr. Abel was always a student. From 1909 until 1929 he made frequent visits to Baltimore and Chicago for post-graduate work in surgery, gynecology, pediatrics, and other subjects.

He was a member of the following medical organizations: Haywood County, Tenth District, and North Carolina Medical Societies; American Medical Association; Southeastern Surgical Congress (charter member); Association of Railway Surgeons (Vice President in 1937); and Association of Military Surgeons. In 1925 he was made a Fellow of the American College of Surgeons.

Dr. Abel was "a doctor of the old school". He was ready to use all the modern technical aids to medical practice, but back of these were (as put by Dr. David Riesman) the sensitive fingers, the keen eye, the trained ear. He never studied psychiatry, but, like the old family doctors, he practiced it daily. He knew his patients and they believed in him.

If Dr. Abel was a physician of the old school, he was a surgeon of the new. During the calendar years 1936 and 1937 he performed 163 major operations (besides a multitude of minor ones) in the Haywood County Hospital, with only two deaths.

The words Ian MacLaren used to describe "A Doctor of the Old School" can well be applied to Dr. Abel: "He did his best for every man, woman and child in his circuit, in heat and cold, in sun and snow, in darkness and light, year in and year out." His patients felt, as did Dr. MacLure's, that "It was good to see him come into the yard, for the very sight of him was victory."

DR. E. R. HINES

The members of the Nash-Edgecombe Medical Society were grieved to hear of the death of our friend and brother, Dr. E. R. Hines, which occurred April 3, 1940.

He was born in Edgecombe County January 22, 1881, and was graduated from the Medcial College of the University of South Carolina in 1916. Immediately afterwards he began practice in Rocky Mount which he continued until his death.

His wife was Sarah Fonville of Duplin County whom he married July 14, 1909, and to her we extend our deepest sympathy.

Dr. Hines was a consistent member of the Methodist church and was also a Mason and Shriner.

It may well be said that he lived in a house by the side of the road and was a friend to man. He never refused to administer to the poor and lowly with the same grace that he did those more able to remunerate him.

(Resolution drawn up by Dr. John L. Lane).

The Psychology of Incurable Disease.—It is only rarely justifiable to tell a patient that he is suffering from an incurable disease. All sick human beings, and all physicians in particular, wish to maintain hope. The knowledge of approaching death is depressing mentally and often throws the most courageous patient into periodic panic. Physicians frequently face difficult psychologic situations, and the solution of these may appear unattainable. On such occasions move slowly and time will help to solve the problem. As a disease progresses to a grave stage, remarkable psychologic changes take place in the patient. His interest rapidly narrows down and his suffering usually decreases. Very sick patients are not inquisitive, and they do not suffer. If you ask a patient on the verge of death how he is, he will reassure you that he is comfortable and at peace.—Soma Weiss, M.D.: The Medical Student Before and After Graduation, J. A. M. A. 114: 1717 (April 27) 1940.

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SPRUE IN NORTH CAROLINA

FREDERIC M. HANES, M.D.

DURHAM

It is appropriate that we should consider the sprue syndrome at this meeting of the North Carolina Medical Society, for our president, Dr. William Allan, published in 1914(1) an excellent description of sprue and gave very clearly the differential diagnosis from pellagra. A year later Edward Jenner Wood, whose early death removed from our Society one whose devotion to scientific medicine should keep his memory green and his name honored among us, published a study of pellagra and sprue(2), which is one of the milestones in the history of these diseases.

Sprue is a disease of great antiquity. Aretaeus the Cappadocian, who had a remarkable genius for painting word pictures of disease, gave in the second century A. D. a graphic account of what today is easily recognizable as the sprue syndrome(3). Since sprue is endemic in certain tropical or subtropical countries, it has received the unfortunate designation of "tropical sprue". Today, largely owing to the monograph of Hess Thaysen, of Copenhagen(4), it is recognized that sprue is not a disease of latitude; it is found frequently in northern countries, and throughout the United States, both north and south. Dr. Albert Snell, of the Mayo Clinic, has studied many instances of the sprue syndrome in patients from the northwestern states(5).

The exact etiology of the sprue syndrome is unknown; but since liver extract contains the curative principle, it is the belief of students of the disease that it is a deficiency state, comparable to the nicotinic acid deficiency of pellagra. At the Duke Hospital Clinic, however, patients have been treated with the various known components of the so-called B-complex, but without results at all comparable to the brilliant effects of liver extracts. Nicotinic acid, riboflavin, B_6 and thiamin chloride, as well as yeast have been used, but with unsatisfactory results. We have recognized, however, for a long time that all deficiencies are multiple, the severest deficiency producing the more obvious clinical aspects of a syndrome. It may be a combination of deficiencies that produces sprue. There is no acceptable evidence that sprue is the result of infection. Ashford's belief that monilia could produce the syndrome has not been accepted by other students of the disease. It is true that antecedent infections may deplete the patient's health and thus be a factor in the production of the syndrome. Pregnancy, too, is very apt to accelerate the development of latent sprue.

The fundamental physiological derangement in sprue is failure on the part of the gastro-intestinal tract to absorb properly fats and carbohydrates, whereas proteins are well assimilated. There is no evidence of failure of pancreatic function, for fats are normally split, and glucose given intravenously shows no insulin deficit. We need

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From the Duke University School of Medicine. Read before the First General Session of the Medical Society of the State of North Carolina, Pinehurst, May 14, 1940.

1. Hiatt, H. B. and Allan, W.: Notes on Cases of Sprue Invalided from the Tropics; Will It Become Endemic Here? J. A. M. A. 63:395, 1914.
2. Wood, E. J.: The Occurrence of Sprue in the United States. Am. J. M. Sc. 150:692, 1915.
3. Aretaeus the Cappadocian: Extant Works of Aretaeus, Edited by Francis Adams, London, Sydenham Society, 1856, pp. 350-351.
4. Thaysen, T. E. H.: Nontropical Sprue: A Study of Idiopathic Steatorrhea, Copenhagen, Levin and Munksgaard, 1932.
5. Snell, A. M.: Tropical and Nontropical Sprue (Chronic Idiopathic Steatorrhea): Their Probable Interrelationship, Ann. Int. Med. 12:1632, 1939.

not pursue further at this time theoretical considerations as to the cause of this curious failure on the part of the gut to absorb normally. Despite much detailed work in our clinic, and elsewhere, no satisfactory answer to the problem has been obtained. We know that the answer lies hidden in the limpid extract of liver used for intramuscular injection, but no single fraction of this extract has been effective. The problem of sprue is in the same state as was that of pellagra before the efficacy of nicotinic acid was discovered.

The *incidence* of the sprue syndrome cannot be stated, but some idea of its relative frequency is obtained by comparing the admissions of pernicious anemia in a general hospital with those of sprue admissions. At the Duke Hospital 37 patients with sprue were seen over a four and one half year period, whereas 160 pernicious anemia patients were admitted during this time—a ratio of about one to four.

Four very striking findings are characteristic of sprue: macrocytic-hyperchromic anemia, fatty stools, great loss of weight and a low, or "flat" glucose tolerance curve. The anemia can not be differentiated from that of pernicious anemia, either from a study of the blood or from an examination of the sternal bone marrow. Sprue, however, is not pernicious anemia plus something else; for the incidence of achlorhydria in patients with sprue is not greater than that found in other individuals, and subacute combined sclerosis is extremely rare. The pernicious anemia patient has lost completely and permanently the ability to elaborate the X-factor, or factors, which produce the normal maturation of the red cells and which protect the central nervous system from degenerative injury. In sprue the elaboration of these factors is, as a rule, only temporarily in abeyance, and replacement therapy, together with a proper diet, results in cure.

A diagnosis of pernicious anemia should not be made in any patient showing free HCl after histamine stimulation. It is certain that neglect of this precaution has led to the erroneous diagnosis of pernicious anemia when the real trouble was sprue. The mistake is a serious one; for the diagnosis of pernicious anemia condemns the patient to a life-time of troublesome and expensive therapy, whereas sprue, as a rule, is amenable to treatment.

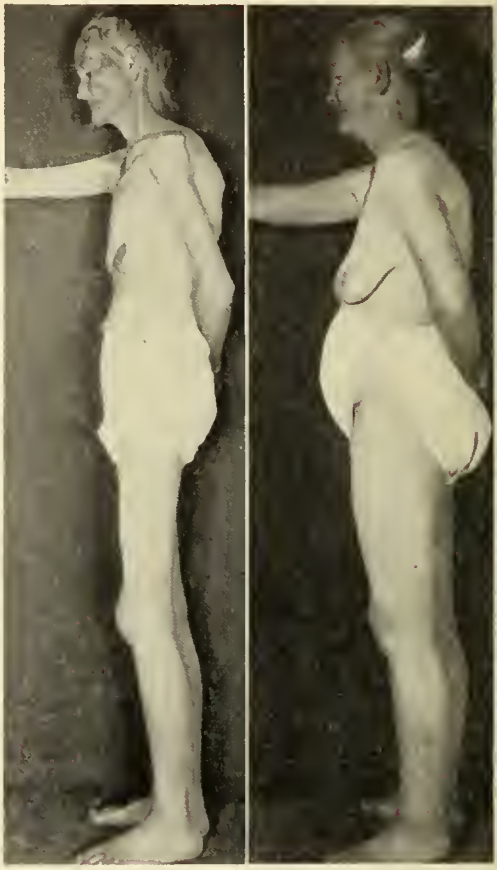

Fig. 1. Sprue cachexia. The picture on the right shows the effect of three months of liver therapy.

The *stools* in sprue do not always conform to the classic description of large, foamy, rancid excretions; they may be "dirty dish water" in character, and the sprue patient may pass only one or two stools daily. In fully developed sprue, however, the passage of many large, frothy, ill-smelling stools, especially in the early morning hours is characteristic. An excess of fat—steatorrhea—is always present. This is best demonstrated by chemical analysis, but staining the stool with Sudan III usually will reveal fat droplets. Fat cannot be thus demonstrated in the normal stool. A quick and useful, though somewhat inelegant method of detecting a fatty stool is to rub it between the fingers.

The sprue patient emaciates rapidly and remarkably (fig. 1). No other disease reduces its victims so quickly to "skin and bones", not even gastric cancer! This is another differential point in separating sprue from pernicious anemia, the weight loss in pernicious anemia being very moderate.

Some years ago Thaysen pointed out that when the sprue patient was given a glucose tolerance test, the rise in blood sugar did not exceed 40 mg. per cent. This is a very useful and reliable test; for, though not pathognomic of sprue, it quickly separates sprue from pernicious anemia, pancreatic steatorrhea and tabes mesenterica—diseases most likely to cause confusion. In the 38 sprue patients whom we have studied at Duke Hospital the blood sugar curves have been uniformly low, averaging a rise of about 12 mg. per cent instead of the normal rise of some 70 to 90 mg. per cent. Two ounces (60 grams) of glucose is sufficient for the test.

The *clinical picture* of sprue, then, is of an individual who with or without obvious antecedent cause, such as pregnancy or a bacterial or amebic dysentery, develops a flatulent intestinal indigestion, loss of appetite, sore tongue, general malaise and fatigue, with a troublesome diarrhea. Weight and strength are lost rapidly, and after a few months the picture presented is that of a very unhappy, emaciated, anemic patient, whose activities are limited by great weakness and easy fatigability, frequently resulting in almost complete confinement to bed(6). If sprue is kept in mind as a differential possibility, and the tests described above are performed, the correct diagnosis is not at all difficult to establish. There is no justification whatsoever for confusing sprue with pernicious anemia, as has been done frequently in the past, and probably is being done today.

The sprue syndrome when it occurs in infants is known as celiac disease(7) and, if not successfully treated, may persist into youth and cause dwarfism (fig. 2). Many years ago Herter in this country and Heubner in Germany described these dwarfed children as instances of intestinal infantilism. In countries lacking in sunlight for large parts of the year, such as England, sprue dwarfism is frequently accompanied by severe rickets with distressing bony deformities.

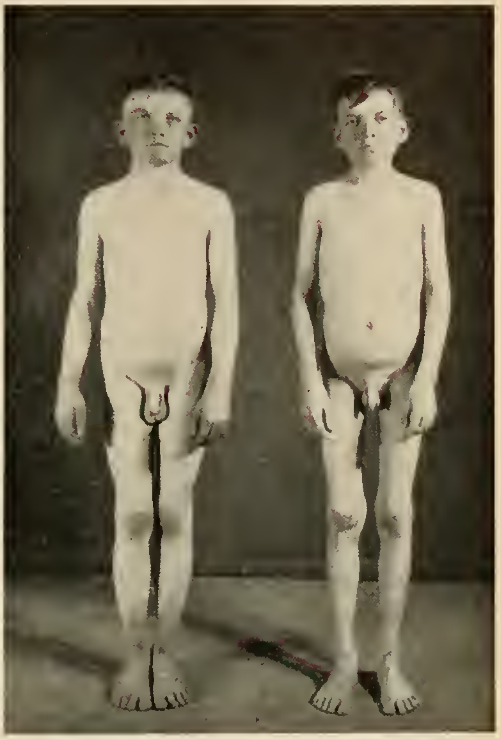

Fig. 2. Two brothers. The one on the left is a normally developed, 13 year old boy. The one on the right, who is 18 years of age, shows dwarfism due to sprue.

In the past it has been difficult to glean from the literature any sound information as to the *prognosis* in sprue. We have followed closely our sprue patients to form an opinion as to their progress under treatment and the ultimate outcome of the morbid process. Without attempting to reduce our experience to figures, since the number of patients is too small for statistical analysis, it yet can be said that sprue patients fall into three groups when considered purely from the therapeutic standpoint. In long neglected patients the sprue process may lead to an irreversible condition where only amelioration of the more troublesome symptoms can be attained. Indeed, death may be the ultimate outcome even when the maximum of therapy is applied. We have had two such patients. It should be emphasized, however, that one cannot tell with certainty which patient will fall into this unfortunate group; for frequently patients with the severest manifestations make a rapid and

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6. Hanes, F. M.: Monograph on Sprue, Oxford Medicine, 5:631, 1936.
7. Hanes, F. M. and McBryde, A.: Identity of Tropical Sprue, Non-Tropical Sprue and Celiac Disease, Arch. Int. Med. 58:1, 1936.

satisfactory recovery under vigorous treatment. At the other extreme are those mild instances of sprue which recover their normal health with a minimum of treatment, combined with a well-balanced diet. Indeed some will recover with such a diet alone, although their progress is greatly accelerated by the use of liver and liver extracts. Between these two extremes all gradations of severity are seen.

As a general rule the sprue patient reacts to proper treatment in a fashion so dramatic that it can, without exaggeration, be called miraculous. To see a patient with sprue cachexia so emaciated that not only the bones but the ligaments are visible, with complete anorexia, the beefy-red tongue slick and sore, passing fifteen to twenty voluminous, fetid stools daily and confined to bed through weakness—to see such a patient recover his appetite after forty-eight hours of treatment, throw off in a few days his weakness and lethargy, recover gradually from the troublesome diarrhea, proceed to form blood at a rapid pace and gain weight at the rate of a pound a day—this is a spectacle to gladden the heart. It is rarely possible for the physician to fulfill the heroic role which the laity is prone to assign to him; sprue offers this unusual opportunity.

In 1926 Bloomfield and Wycoff applied to the treatment of sprue the liver therapy which Minot and Murphy had just shown to be highly efficacious in the treatment of pernicious anemia. Many observers have amply confirmed their excellent results, and today liver therapy is universally used in the treatment of sprue. Liver may be eaten or given in the form of crude or refined extracts, but since the sprue patient eats poorly and absorbs imperfectly, liver is best given in the beginning parenterally by intramuscular injection.

Liver treatment must be *adequate*, but it is not possible to say in any given case exactly the amount of liver that will be required. We feel that our results have been best when about twice as much liver has been used as is necessary in the treatment of pernicious anemia. In the beginning 15 units of liver extract may well be used every other day for six doses. This large dosage should restore the appetite and assure the ingestion of a liberal diet. Cooked liver should then be eaten twice weekly, and the crude liver extract of the Valentine Company is very efficacious. On the whole the patient's progress must determine the length and intensity of treatment. With the probability of multiple deficiencies in mind, it is well to give orange, lemon or tomato juice daily. Dried brewer's yeast may be given for its well-known content of the B-complex. Since the macrocytic-hyperchromic anemia gradually improves and may change to a mild secondary type, it is well to give iron in large doses for several weeks.

Under the influence of liver, the sprue patient develops a ravenous appetite and eats a full diet without difficulty. We have not found it necessary or desirable to use any special diet, but, since fats are absorbed poorly for a longer or shorter period, it is well to limit strictly the fatty content of the diet. Usually it suffices to prohibit the use of butter, cream, fat meats and gravies. The patient soon learns his own tolerance to fats and adds them very gradually to his diet. Some patients seem never to regain their former ability to absorb fats, and will report that mild diarrhea follows the ingestion of fatty foods. The great majority, however, are able to resume a full, well-balanced diet, and they should be instructed very carefully as to just what constitutes such a diet; it must be impressed upon them with firmness that their illness has resulted from improper dietary habits.

Sprue in North Carolina is not a disease of poverty. Most of our patients have had access to proper foods, but have chosen an ill-balanced diet through personal taste or idiosyncrasy. One of our severest instances of sprue was in a well-to-do physician, a member of this society, who had adopted an inadequate diet because of poor teeth.

Note. Since this paper was finished Vedder(8) has published a discussion of the etiology of sprue, in which he advances the view that sprue is due to a deficiency of the anterior pituitary hormone, prolactin. Vedder based his suggestion on the work of Schooley, Riddle and Bates(9), who, using hypophysectomized pigeons, found an atrophy of the intestinal mucosa which prolactin restored to a normal condition.

We have treated a typical instance of sprue, in a woman of twenty-six, with prolactin kindly furnished us by Dr. Schooley,

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8. Vedder, E. B.: A Discussion of the Etiology of Sprue. Am. J. Trop. Med. 20:345. 1940.
9. Schooley, Riddle and Bates: A Specific Action of the Anterior Pituitary on the Intestine. Anat. Rec. 70, No. 1, 1937.

of the Difco Laboratories. We could detect no improvement whatsoever while the patient was under prolactin treatment, but when liver therapy was administered, improvement was prompt and dramatic.

Conclusions

1. Sprue is a deficiency disease, curable, as a rule, by liver therapy and a well-balanced diet.
2. By the use of modern methods of study sprue is readily differentiated from pernicious anemia, which is incurable by any known therapy.

THORACOPLASTY WITH APICOLYSIS

C. R. MONROE, M. D.
C. D. THOMAS, M. D.
C. L. GRAY, M. D.

SANATORIUM

The treatment of pulmonary tuberculosis was first placed on a sound basis about 1885, at which time "rest, good food and fresh air" became known as valuable measures in the control of this disease. Today, fifty-five years later, phthisiotheraphy remains fundamentally unchanged; yet these years have been most fruitful in that they have brought about numerous ways of forcing a lung to rest. It is this forcing of a lung or a part of a lung to rest which has made pulmonary tuberculosis, to a great extent, a surgical disease. Employment of the surgical measures of artificial pneumothorax, diaphragmatic paralysis, pneumonolysis and similar procedures brings arrest and healing to many pulmonary tuberculous lesions. But it sometimes happens that these procedures fail in their designed purpose of controlled lung collapse, and cavity-closure. Fortunately there remains thoracoplasty, a positive and permanent method of lung collapse, to which the patient may look for help in his otherwise losing struggle.

In considering the application of thoracoplasty it is assumed that the patient is a fairly good surgical risk. This implies that the cardio-respiratory reserve functions are adequate, that there has been no recent exacerbation of disease process, and that the cavernous lesions are mainly unilateral and productive in character. It is also assumed that reversible and less radical surgical measures have been employed, and in spite of these the cavities remain open and the sputum continues to present tubercle bacilli. Again it may be assumed that most of these suitable and good risk patients, without thoracoplasty, will have a much shorter life expectancy and will likely remain chronic invalids. With thoracoplasty 80 per cent of them will have their lesions healed and be given back an almost normal life expectancy. The present operative and post-operative thoracoplasty mortality from all causes over a period of two years is approximately 10 per cent. It follows then that thoracoplasty is a valuable permanent collapse procedure and should not be delayed beyond the optimal time for it by temporizing with less certain measures. The work of Semb(1), Overholt(2), and others shows the value of thoracoplasty to be definitely enhanced by supplementing it with apicolysis, and our experience at the North Carolina Sanatorium convinces us that such is true.

The ideal thoracoplasty should establish complete collapse of the diseased lung area with closure of the cavities; it should leave uncollapsed non-diseased pulmonary tissue and in this respect simulate the perfect selective collapse of pneumothorax; the procedure itself should be such that the factor of safety is highest. These objectives are clear cut and now definitely obtainable. This is fortunate, because there goes with thoracoplasty an alteration of the thoracic cage which is irreversible. Should thoracoplasty fail in these objectives the disappointment will be great, because the patient has been subjected to a serious surgical procedure, his life is still threatened by tuberculosis, and revisions are not only difficult in accomplishment, but serious from the standpoint of hemorrhage and shock.

Marked advance was made toward the ideal thoracoplasty when the complete paravertebral operation was abandoned in favor of the upper multiple stage limited thoracoplasty. Another and equally as great a step toward this ideal was taken in 1935 when Semb devised and added to the upper stage rib resection a method of lung mobili-

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Read before the Section on Surgery, Medical Society of the State of North Carolina, May 14, 1940.

1. Semb, C.: Thoracoplasty with Extrafascial Apicolysis, Acta Chir. Scandinav., 1935, Supp. 37 (art. 2), 76, 1-35.
2. Overholt, Richard H.: American Review of Tuberculosis Vol. 35, No. 4, April, 1937.

zation which was termed apicolysis. After the first two or three ribs are removed, this supplementary procedure, which usually requires ten to fifteen minutes, is accomplished by dividing the structures which suspend the upper lobe and its apex. These structures consist of fascial expansions and ligaments (Sibson's fascia and Sebileau's bands) and the intercostal bundles including the posterior periosteum. The former firmly anchors the pleural dome on a plane with the transverse process of the seventh cervical vertebra, and the latter holds the lung to the vertebrae. With these supports divided, the endothoracic fascia and the pleura can be separated from the brachial plexus, the vertebral bodies and the mediastinum by blunt dissection, thus dropping the pleural dome a distance of three or four inches to the level of the fourth rib posteriorly. The lung is held in this position and re-expansion is prevented by closing the thoracoplasty wound without drainage and leaving the apicolysis cavity filled with normal salt solution or air.

We have about reached a point where we feel that apicolysis is as important as thoracoplasty itself in the treatment of upper lobe tuberculosis. To express it differently it might be said that the indications for thoracoplasty are indications for apicolysis. Frequently thin-walled cavernous lesions are seen which appear to be ideal for closure by thoracoplasty; yet a well performed thoracoplasty fails to bring about the closure because the collapse it offers is only lateromedial and to a less extent antero-posterior. Additional rib resections are then required which collapse uninvolved pulmonary tissue, further reduce vital capacity, and increase the patient's deformity and disability; closure of the cavity is still uncertain. These subsequent rib resections must be done at four to six week intervals in order to obtain satisfactory additional collapse before regeneration of previously resected ribs occurs. This interval is too short for a complete "come back" from a succession of major operations in debilitated patients, and is a contributory factor to the mortality rate. In supplementing the first stage thoracoplasty with apicolysis conditions are obtained which are most conducive to cavity closure—namely, pressure upon the cavity in all directions. The latero-medial, antero-posterior, and vertical tension upon the lung is replaced by pressure in these same directions and the lung apex is held down to the level of the fourth rib posteriorly by the air or normal saline tamponade. Thus many patients will have their cavities closed by a single stage thoracoplasty; many will require a second stage, but seldom will three or more stages be necessary. If more than the first stage thoracoplasty be required to close the cavity, the interval between these stages may be increased as long as necessary for the patient to recover completely from the preceding operation, without fear of failing to obtain collapse from the subsequent rib resection. This is a great factor in reducing the mortality associated with thoracoplasty.

Our experience with combined thoracoplasty and apicolysis at the North Carolina Sanatorium began in 1938. Final statistics should not be made in these cases sooner than two years after the operative procedure has been completed; thus this report must be considered a preliminary one. We are giving this report because the operation is relatively new and not universally adopted, also because our results have been gratifying. We have had no experience with bilateral thoracoplasty. From February 1938 to February 1940, 101 operations have been performed on 53 patients. Apicolysis has been employed routinely in all first stage and revision operations.

TABLE I

Results of Thoracoplasty With Apicolysis In 53 Patients

(February 1938-February 1940)

		First Stage	*Second Stage*	*Third Stage*	*Fourth Stage*	*Total*
Closure of Cavity and Sputum Negative	Number Patients	12	26	5	1	44
	Percentage	22.7	49	9.5	1.9	83.1
In Need of Further Surgery	Number Patients	3	3	1	0	7
	Percentage	5.6	5.6	1.9	0	13.1
Patient Mortality	Number Patients	1	1	0	0	2
	Percentage	1.9	1.9	0	0	3.8
Operative Mortality (101 Operations)	Number Patients					2
	Percentage					1.9

Closure of cavity and sputum conversion has been obtained in 22.7 per cent of those cases having first stage operations, 49 per cent of those having second stage operations, 9.5 per cent of those having third stage operations, and 1.9 per cent of those having fourth stage operations—making a total of

83 per cent in which good results have been obtained. Another group of these patients —13.1 per cent—are in need of further surgery, either because their operations are of recent date, or due to the development of some complication. We have had two deaths among our operative patients. One died six months after a first stage operation from extensive spread of the disease to the contralateral lung, and the other died ten days following the second stage operation from embolus of the pulmonary artery. This diagnosis was confirmed at autopsy. Our patient mortality is 3.8 per cent, and our operative mortality is 1.9 per cent. (See table I.)

TABLE II

Complications

		First Stage	*Second Stage*	*Third Stage*	*Total*
Moderate Shock	Number Patients	6	3	0	9
	Percentage	11.3	7.9	0	8.9
Severe Shock	Number Patients	4	3	0	7
	Percentage	7.5	7.9	0	6.9
Paradoxical Respiration	Number Patients	0	4	0	4
	Percentage	0	10.2	0	3.9
Spread of Disease	Number Patients	4	1	0	5
	Percentage	7.5	2.6	0	4.9
Post-operative Psychosis	Number Patients	1	0	0	1
	Percentage	1.9	0	0	.9
Wound Infections Without Ultra-Violet Lights 75 Operations	Number Patients	10	6	1	17
	Percentage	13.3	8	1.3	22.6
Wound Infections With Ultra-Violet Lights 26 Operations	Number Patients	0	0	0	0
	Percentage	0	0	0	0

The most common post-operative complication encountered has been shock. Fifteen and eight-tenths per cent of all *operations* were followed by moderate or severe shock, the greater proportion of which occurred following first stage operations. Paradoxical respiration has occurred in 3.9 per cent of the operations, and followed second stage operations when four ribs were removed. Spread of the disease occurred following 4.9 per cent of the operations; except for one case this has been of slight extent and is showing evidence of clearing, so that further needed surgery can be completed. Post operative psychosis occurred in one of our infected cases and cleared up completely after about two weeks. (See table II.)

Before the installation of ultra-violet lights in our operating room 75 operations were performed. Of these 22.6 per cent developed moderate to severe infections. Since the installation of ultra-violet lights 26 operations have been performed and all wounds have healed by first intention. In no instance have we encountered a tuberculous infection of the thoracoplasty wound.

Blood tranfusion has been adopted as a routine measure in most of our cases because it makes for a more rapid and satisfactory recovery in these debilitated patients.

We have invariably performed these operations under cyclopropane, which we consider the most satisfactory anesthetic for tuberculosis patients because of the high oxygen concentration of the anesthetizing mixture.

Conclusions

Apicolysis does not add to the surgical hazard of thoracoplasty.

Clinical improvement of patients is earlier and more pronounced because of the immediate and more effective collapse of the diseased lung.

There is no additional marked reduction in vital capacity because the collapse is selective and healthy lung tissue is conserved.

The pleural dome is left below the level of unresected ribs with first stage operation, thus allowing longer interval between stages.

The number of stages necessary for cavity closure has been reduced.

Abstract of Discussion

Dr. J. C. Burge (Rocky Mount): We think Dr. Monroe is to be congratulated on his results with the routine use of apicolysis with thoracoplasty. His mortality rate is the lowest of any series so far published. His results are excellent, and we think he has done a fine job at the Eastern Sanatorium.

However, the Staff at the Western North Carolina Sanatorium have some very definite ideas that are not in accord with his. We have performed 179 thoracoplasties of one kind or another on 72 patients since the institution was opened. There have been two operative deaths, an operative mortality of 1.12 per cent and a patient mortality of 2.7 per cent. There were two late deaths, making a total mortality rate of 2.24 per cent per operation and 5.5 per cent per patient.

We have performed apicolysis on 14 patients of the 72. We are definitely of the opinion that apicolysis is indicated only in patients with large apical cavities, particularly when you hope to secure a selective collapse.

We further believe that apicolysis definitely increases the risk to the patient, and many of our patients have been such poor risks we don't dare to do it. We had done several thoracoplasties with an existing pneumothorax on the opposite side. These patients were all such poor risks that the procedure was divided into very easy stages, and in that way, we lost only one patient. In this type of patient, apicolysis is contra-indicated.

There are also many patients whose whole lung is diseased, who have marked retraction and who do not have large apical cavities, in whom we believe that just as good results can be obtained by thoracoplasty alone and that apicolysis adds nothing to the results and does not decrease the number of ribs to be removed. These patients all need complete thoracoplasty.

We have had two late infections in the subscapular space, one staphylococcic occurring six months after the operation and one tuberculous occurring twelve months after operation. We have never seen this after thoracoplasty alone.

We have had the same experience with infection as Dr. Monroe. During the first fifteen months, while the new wing was being constructed, our infections were about 20 per cent. At about the time the construction was finished, we began to use paper masks, and the operating room was air conditioned. Since then our infections are not over 2 per cent.

We do not believe that routine blood tranfusions are necessary. We do not use them. In the few cases shocked by the operation, we have used 6 per cent acacia solution, which relieves shock as well as do blood transfusions, is less expensive and much simpler of administration. We reserve blood transfusions for the occasional anemic patient.

Of the 72 patients operated on, 9 are deducted because their operations have not been completed. This leaves 63 patients, 4 of whom are dead, 59 living. Of these, 51 have negative sputums, a percentage of 86.4 per cent of living cases. Some of the rest will undoubtedly be completed. One patient's sputum continued to be positive on account of tracheobronchial tuberculosis, and this patient was cured by removing the right middle and lower lobes.

Dr. C. E. Gardner (Durham): As Dr. Monroe has indicated, thoracoplasty offers a great deal to the tuberculous patient with a cavity which cannot be collapsed by pneumothorax, or pneumolysis, or by an operation on the phrenic nerve.

In the original Sauerbruch type of thoracoplasty only short segments of all the ribs were removed in one or two stages, with the result that a partial collapse of the entire thorax occurred—good lung and bad. This method was slowly given up and in its place, the selective thoracoplasty was used. In it, long segments of the upper ribs were removed, so that only the diseased lung, with its cavity, was collapsed.

The difficulty there, as Dr. Monroe indicated in one of his charts, was that many of these large apical cavities, particularly those nearer the medial portion of the lung, were collapsed only laterally. It was to overcome this difficulty that Semb added apicolysis to the first stage thoracoplasty, which he first described in 1935. In it, as Dr. Monroe indicated, those fascial expansions which suspend the apex of the lung to the dome of the thoracic cage are cut, allowing the dome to drop downward. Such a procedure, as you can well see, allows these large apical cavities to be compressed, not only from above, but laterally as well, and allows a much more satisfactory collapse of the cavity.

We started using apicolysis in the summer of 1938 and we have used it uniformly in all of our first stage thoracoplasties. We have only praise for the procedure. In our hands, it does not seem to add to the operative risk. It certainly allows a much more satisfactory collapse of these large apical cavities and, as Dr. Monroe has indicated, it allows a much longer time period to elapse between stages, if necessary.

I think that Dr. Monroe, Dr. Thomas and Dr. Gray should be congratulated most heartily for the excellent results they have had. I don't know any place in the literature where such a low operative mortality is reported as theirs, and certainly their incidence—83 per cent of complete closure of tuberculous cavities—is excellent. These results are a tribute to the care with which they have selected their patients, the skill they used at operation and the very excellent care they gave their patients after operation.

Dr. Deryl Hart (Durham): I would like to say a word in commendation of the paper and speak specifically of the matter of infection. As you noticed, Dr. Monroe cut his infection from around 22 per cent to zero.

(Slide) I will simply throw on a slide or two showing the air contamination in non-air conditioned operating rooms. I regret I do not have a slide with me of an air conditioned room. Probably 75 per cent of those organisms would be eliminated. Most of those are staphylococci.

During the winter months the contamination is high, and during the summer months it may drop to a very low level. During the winter, the nose and throat contamination is quite high among the operating personnel and the general population.

We used to postpone our operating procedures to the summer, but in the summer we have the problem of perspiration. The person under the greatest tension perspires the most.

Having tried various methods to eliminate this, we turned to radiation as a method of sterilizing the air, with a unit mounted over the operating table. At points out to ten feet we can kill all of the organisms except those shaded by the upright edge of the Petri dish. They can be killed at the operative site in one to two minutes.

Before we started radiation, we had 15,557 operations, of which approximately 10 per cent were large, clean, primary incisions. In that group we had eleven deaths known to have been caused from infections. From January, 1936, to December, 1939, we had 23,216 operations of which a little over 2,000 were clean, primary incisions, without one death from a wound infection. So that from the time we put in ultra violet radiation, we eliminated deaths from wound infection in operations where it was used.

Up until 1938, of 798 cases, we had a 4 per cent infection rate; in the first 367 operations with radiation, we had two stitch abscesses, with an infection rate of .5 per cent.

During the past year, out of 6,535 operations, 606 were performed in the field of ultra violet radiation, with one patient having a diagnosis of postoperative wound infection. On careful review of the cases, we found five which would have to be classed as infected, since they had small infections.

Patient and Disease.—The practice of medicine is intensely personal and no system or machine can be substituted for the personal relationship. The proper interpretation of symptoms involves not only a comprehension of the causes of symptoms but also of the person in whom the symptoms arise. Every experienced physician knows that when one of his patients complains of a pain in the stomach it is probably a very trivial matter and when another makes apparently the same complaint it is probably a very serious matter.—Peabody, Francis W.: Doctor and Patient, New York, The Macmillan Company, 1939.

GOUT

H. C. Thompson, M. D.

Shelby

The object of this paper is to arouse an interest in this subject, to inform you of its frequency, and to urge a more accurate diagnosis in arthritis. My interest in this subject was aroused when I had an attack myself. Since that time I have read many articles on the subject, and have come to the conclusion, from reading the literature and from my own observations, that this condition is not necessarily caused by overeating or by alcohol, but that either of these can be a factor.

Gout is a constitutional disease associated with a uric acid diathesis. According to Hench, the incidence is much greater than generally thought, only one case out of five being diagnosed correctly. Five to eight per cent of all arthritics seen at Mayo's are gouty. This conclusion is also borne out by the experience of Kinel and Haden.

Etiology

The cause of gout is generally considered as unknown. The following are considered predisposing factors:

1. Age: Gout may occur at any age, but usually starts between thirty and forty years. In children it is hereditary.

2. Sex. Ninety per cent of cases are in males.

3. Heredity: Llewellyn says that gout is purely hereditary and is based on a tendency to cellular sensitization, which becomes manifest in the presence of the proper antigen.

4. Weight: This seems important, with gout apparently occurring more often in heavy people and heavy eaters, as shown by Kinell and Haden.

5. Alcohol: This probably has some bearing in that it stimulates the appetite and causes a greater intake of purine foods. The heavier wines and ales are especially contraindicated. Lighter wines, beer, and distilled beverages are not considered so harmful.

Other inciting factors are: allergic manifestations, mental strain, over-work, coldness and dampness.

Surgical operations are predisposing to gout. Hench *et al* state that "When, without any reason, acute arthritis complicates operation, on men at least, the possibility should be seriously considered that it represents an acute, generally short, bout of gout."

Symptoms

The individual may have a sudden acute attack of gout, but usually there are various gastro-intestinal, urinary or circulatory disturbances as premonitory signs. The attack often occurs after a dietary indiscretion; however, Cohen says that the ravenous appetite at this time is a symtom of the disease, and not the cause of the attack, and that the attack would appear whether or not the appetite is indulged. Some of the symptoms are heart-burn, flatulency, sour eructations, and constipation. These symptoms usually become worse, and to them are added headache, vertigo, drowsiness, cramps in the calves and elsewhere, and pains in various articulations. There is a firm tense pulse, irritability, bad temper, and mental depression, but the patient usually has a good appetite.

These preliminary symptoms all disappear, and the patient usually feels better just before the attack.

Classically the attack occurs in the great toe during the night between twelve and three o'clock, but it may occur in any joint at any time. The spine and hip are usually spared. The attack may begin with a chill and pain in the joint which increases to agony. There is a tense, throbbing, splitting sensation, and the slightest jar or touch is very painful. The temperature may rise to 102°. The joint is swollen and inflamed. but there is usually no fluid, except perhaps in the knee-joint. The joint may feel better during the day, with a return of symptoms at night. The sleep is very much disturbed. There is now a loss of appetite and often a great loss of weight; the thirst is increased and the uric acid excretion in the urine is markedly increased. The stools are very offensive.

The duration of the bout is usually four to ten days; however it may last a few weeks, or the disease may be chronic. The frequency of the attacks are at first usually once or twice a year, more often in the spring and fall. As they become more frequent and of longer duration, they are less

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painful, but the deformity tends to increase with the tendency for the attacks to become chronic. At first the stiffness of the joints disappears entirely after an attack, but later it does not. Tophi gradually form in the cartilage, tendons, and bursae.

At first the patient feels much better after the acute attack and regains full use of the joints. Some have recommended that it is better not to suppress the attack but to encourage it with alcohol, as suppressed gout may lead to more serious and even fatal visceral or internal gout.

Types of Gout

1 Acute—as described.

2. Chronic—more regular, longer attacks with more deformity.

3. Poor man's gout: This often occurs in those who do not over-eat and who are teetotalers.

4. Visceral — This may alternate with joint gout, and often occurs after suppressed gout. It is most apt to affect the kidney, and produces a granular atrophic kidney, gravel calculi and oxaluria. The symptoms include headache, vertigo, fainting, sudden delirium, mental depression, epileptic fits, apoplectic attacks and neuralgias. The heart symptoms vary from palpitation to angina. There is produced a fatty liver and cholelithiasis. Bronchitis and asthma are often found, but the patient is resistant to tuberculosis.

Pathology

Investigators have shown that between attacks of gout uric acid or nitrogen is retained in the body, whereas during the attack the excretion of uric acid is markedly increased. There is more uric acid formed and less excreted between attacks.

According to Talbot, the increase in uric acid in the patients past fifty with a clinical renal insufficiency is due to a diminished excretion. He did not find any evidence of a diminished destruction in the body. Folin found that three patients with gout eliminated injected uric acid as rapidly as controls. Talbot thinks that increased formation seems to be the most acceptable cause of the increase of the uric acid. Talbot has further shown that there are cyclic changes in the metabolic processes of the gouty patient. On a constant fluid intake gouty patients have a diuresis from twenty-four to seventy-two hours before an acute attack. The diuresis is accompanied by an increased excretion as well as an increased concentration of urinary constituents, especially sodium and chloride. The maximum output is noted on the day before, or on the day of the maximum articular distress, and is approximately twice the regular output. The excretion of uric acid is also increased, but curiously, under this constant food and fluid intake, along with diuresis, there is a gain in weight, due to a diminution in the insensible loss of weight. This cycle also took place in attack-free periods. A drop in the barometric pressure seemed to precede the diuresis by approximately twelve hours. Humidity and temperature did not seem to play any part.

The local blood supply of the cartilage is poor and this results in an increase in the pH, which greatly favors autolysis or anemic necrosis of the cartilage, breaking it down from nucleo-proteins to uric acid. There is an excess of sodium ions in cartilage, this causes a formation of relatively insoluble sodium biurate, which, because of the poor an excess of sodium ions in cartilage. This occurs most often in cartilage, than in ligaments, tendons, bursae, connective tissue and skin.

Diagnosis

The diagnosis may be either presumptive or proved gout. A history of repeated attacks of a rapidly occurring and disappearing arthritis, with freedom from symptoms in between, temperature of 101 to 102°, a leukocytosis, an increase in the sedimentation rate, uric acid in the blood from 4 to 8 mg., or higher, lead one to suspect gout, especially in a male of the right age group. Later the x-ray and finally the presence of tophi may establish proved gout.

Lockie was able to produce an acute attack in nine cases of proved gout out of ten with a low carbohydrate, low protein and high fat diet.

All arthritic patients should have a complete blood count, sedimentation rate, x-ray, uric acid determinations, and urinary function tests in addition to the regular general physical examination and search for foci.

Differential Diagnosis

Gonorrheal arthritis, rheumatic fever, trauma, acute bursitis, hemophilia, acute rheumatoid arthritis and septic joint are the main conditions in which acute arthritis occurs. The clinical features of all are so different from gout that no difficulty should be experienced in differentiating them, provided gout occupies a prominent place in the mind when one is thinking what a case of acute arthritis may be. If gout is not seen until the stage of chronic gouty arthritis has been reached, the differential diagnosis will lie between gout and rheumatoid or hypertrophic arthritis. The history of onset is the most important differential feature, hypertrophic arthritis being always, and rheumatoid arthritis usually, insidious in onset, whereas chronic gouty arthritis is invariably preceded by acute attacks with complete remission.

Prognosis

This condition is rarely fatal in the acute attack; however, it is prone to return, and has a tendency to become chronic. Chronic gout shortens the life expectancy an average of five years. There is diminished resistance, and the patient often dies of uremia.

Treatment

1. Acute Gout: A liquid purine free diet, complete rest in bed, and usually hot soaks of magnesium sulphate properly and carefully applied are very helpful. Morphine may be indicated. It may take two or more grains of codeine and twenty grains of aspirin several hours to give any relief. Colchicine, the crystalline, in doses of gr. 1/120 or 1/100, seems to have a most soothing and little understood analgesic affect in gout. Talbot in a personal communication to me instructed me in the use of this amount until toxic manifestations appeared. The dose should be repeated every hour or hour and a half until nausea, and possibly vomiting or diarrhea appear. Suppression of the attack is not considered advisable by most writers.

2. Chronic Gout: Here a lacto-vegetable diet, purine free or nearly free, with liberal protein and low fat is advisable. Especial emphasis should be put on regular meals and routine of life, without excesses of any kind. There should be a large fluid intake, and dehydration should be avoided. It has also been advised to avoid excessive sleep, and Talbot advised to exercise the joints to the point of pain.

Diets: It is possible to control some cases of gout by diet alone.

Drugs: The more common drugs used in the treatment of gout are:

1. *Colchicine,* the use of which has already been described, the action of which is unknown. The patient should be advised to have it on hand at all times because of its specific action in the treatment of the acute attack. The wine of Colchicum is not very stable nor is it very well standardized; so its use is not advised. Although Colchicine is generally prescribed at the onset of attack, there is a great difference of opinion as to whether it should be used to the point of producing diarrhea. Hench and Talbot are two who believe that it should be used to that extent.

Lockie demonstrated in seventy-five patients with proved gouty arthritis that all experienced marked relief at the time of diarrhea, and in fifty control cases of various types of arthritis that only a few had at best transient mild relief.

2. *Cinchopen,* which is used to increase the excretion of uric acid, but which may produce serious liver damage in rare cases. Some advise against the use of this drug and use instead salicylates. Most physicians advise a restriction of purines with Cinchopen long after the acute attack is over in order to prevent subsequent attacks, if possible. This drug is used in 5 to 7½ gr. tablets three times a day for about three weeks, then there is a four-week interval. It is continued in this manner for about a year; thereafter, it is given one month out of every four for an indefinite period.

3. *Neocinchopen,* which is less toxic and is preferable. A dose of 7½ gr. three times a day, two or three times a week for a month, alternating with periods of freedom from the drug, may be effective in preventing attacks.

There is no pharmocologic equivalent of Cinchopen, with the exception of Neocinchopen. Many physicians have substituted salicylates, although many believe that they have only a slight analgesic effect and do not increase the excretion of the urates. Recently some have been using the synergistic action between salicylates and glycine (amino-acetic acid) which has had a definite effect on excretion of urates. Hench states that his preliminary results have been promising and he hopes that perhaps an effective and practical substitute for Cinchopen in gout may be at hand. The salicylates used alone to the extent of increasing the excretion of urates would produce sweating and gastro-intestinal irritation.

4. *Thiamin Chloride:* According to Vorhaus and Kramer, thiamin chloride in doses of 1 to 10 mg. daily gave moderate to marked relief in 80 per cent of twenty-five cases, but caused a slight transient flare-up in 92 per cent of the cases.

Various ointments, particularly Ichthyol, are used, as well as various laxatives, although here the dehydrating effect should be be considered.

Physical Methods: Calthrop has written a fairly extensive article on the physical methods in treatment of gout. After reading his article describing the many types of baths, about the only conclusion I could draw was that there were many different places where you could get different kinds of baths; however, I doubt that any of these are of marked value except for the analgesic effect on the joints. Massage, gently applied, after the acute stage has passed off is of some value.

The Crucial Test.—Diagnosis should be considered the first phase of treatment. Certain aspects of private practice simplify diagnosis; others make it more difficult. The practitioner knows his patient intimately and he sees him from time to time. He is familiar with his mental, emotional and bodily patterns. He has an opportunity to know the normal physical signs of his patient. Hence he possesses a well established normal base line. When a new symptom develops, he need not spend time with the "past history" or apply the machinery of fine search. He will not try to "cover himself" at the expense of his patient. He will not search for Koch bacilli in the sputum or take stereoscopic roentgenograms of the chest whenever slight fever and cough develop, just because cough is the earliest manifestation of pulmonary tuberculosis and of carcinoma of the lung. And yet to know when the combination of symptoms signals a disorder of minor significance and when it indicates the early manifestation of illness of a serious nature requires keen insight and mature judgment. This is the most crucial test of the physician's ability.—Soma Weiss, M.D.: The Medical Student Before and After Graduation, J.A.M.A. 114:1715 (April 27) 1940.

ACUTE DISSEMINATED ENCEPHALOMYELITIS

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WINSTON-SALEM

Acute disseminated encephalomyelitis may be defined as a disorder of the nervous system characterized clinically by the sudden onset of certain sensory and motor dysfunctions associated with patchy areas of degeneration in the white and gray matter of the central nervous system. It is my purpose to present three cases illustrative of this condition and to discuss it briefly.

Case One

O. F., a white girl, aged thirteen, was admitted to the City Memorial Hospital on January 16, 1940, because of paralysis and numbness in both extremities and difficulty in voiding.

History. The patient had had measles four years previously and had recovered without complication. She had had pneumonia at the age of six, and whooping cough and chicken pox before this time. One week before admission she had begun to notice some weakness of her legs. During the ensuing days this weakness had progressed to the point where she had become unable to walk. With it developed numbness of the lower extremities, progressive in nature, and a difficulty in voiding.

Examination. The patient was paralyzed in the lower extremities, being unable to use the right leg at all and able to achieve only the slightest movement in the left leg. Abdominal examination revealed a markedly distended bladder which was not causing the patient the slightest discomfort. Catheterization was performed immediately and 1000 cc. removed, the bladder not being emptied. Examination of the cranial nerves showed no abnormalities. The eyegrounds were normal. Examination of the sensory system revealed an anesthesia for all forms of sensation, extending roughly to the knees, and with some irregular patches of diminished sensation on both thighs. There was impaired sensation in the perianal and vulvar regions. The rectal sphincters were relaxed. The ankle jerks were both absent, as was the right knee jerk; the left knee responded only slightly. Abdominal reflexes were absent. The patient's mental state was bright, there being no evidence of somnolence.

Laboratory data. Examination of the blood revealed: red blood cells 4,414,000; white blood cells 8,600; differential count normal; hemoglobin 13.5 grams. Spinal puncture was performed two days after admission. The fluid was clear, the pressure 100 mm. of water. Nine lymphocytes per cubic millimeter were found to be present. Globulin was increased, and quantitative sugar determination revealed 76 mg. per 100 cc. On January 17 an x-ray examination of the dorsal and lumbar spine revealed no abnormalities. The patient showed a 1+ Mantoux. The urine was normal at first, although a mild cystitis developed as a result of repeated catheterizations.

Course. The patient remained in the hospital one day less than a month. During this time there was general improvement in the neurological findings. She needed to be catheterized for about three weeks, but during the last days of her hospital stay she became able to empty both her bladder and bowels, though usually involuntarily. There was sufficient improvement in motor power in the lower extremities to enable her to turn herself in bed and to change the position of her legs. There was slight improvement in sensory function in the affected areas. Since discharge from the hospital this improvement in motor power in the lower extremities has increased sufficiently to allow her to stand and to walk with some help.

Case Two

S. S., a twenty-eight year old white male, was admitted to the City Memorial Hospital on December 9, 1939, complaining of pain across the shoulders and weakness and numbness of the lower extremities.

History. About six days before admission he began to feel a sense of numbness in his feet. This sensation was shortly afterwards followed by weakness of the feet and legs. Within a short time he became unable to void. The past medical history was essentially negative. There was no history of luetic infection nor of treatment for such a condition.

Examination. There was almost complete loss of power in the left lower extremity, and marked impairment of function in the right. There was an abortive bilateral ankle clonus. There was a positive Babinski sign on the left. There was impaired sensation for pain and temperature in both lower extremities, extending to an irregular line of demarcation just above the knees. Biceps and triceps reflexes were normal. The right knee jerk was normally present; the left was absent. The ankle jerks were both moderately increased. The abdominal and cremaster reflexes were absent. On ophthalmoscopic examination the optic discs were found to show some haziness of the margins, but there were no other fundal abnormalities. The remaining cranial nerves were normal.

Laboratory data. Spinal puncture was done on December 10. Clear fluid was obtained, the pressure not being increased. The cell count was 12 lymphocytes per cubic millimeter. The gum mastic curve was 1222100000. The spinal fluid Wassermann was reported as negative from the City-County laboratory, but as doubtful from the State laboratory in Raleigh. The blood Kahn test was reported as doubtful on December 12.

Course. For several days after admission there was no change in the patient's condition. His temperature varied between normal and 100.4. He remained unable to void, and an indwelling catheter was inserted. Gradually during the ensuing days he regained partial use of his legs, and there was slight improvement in sensation. His bowel function returned, and on discharge on January 29, he was able to void voluntarily and to support his weight on his legs. Sensory findings were by this time essentially normal.

Case Three

J. M., a white male, aged twenty, was seen in his home on November 14, 1939, because of a sudden loss of power in both legs, paralysis of the bladder, and numbness in both feet. These symptoms had developed rapidly during the course of what his physician described as a mild attack of influenza. He had suffered from some nasal congestion, a low-grade fever, and some aching in the lower back region. He had been catheterized a few hours prior to the examination, after he had become unable to void. The past history was negative for any relevant disease. One sister had suffered from an attack of infantile paralysis several years previously.

Examination. There was marked loss of power in both lower extremities. The patient was not able to support the weight of his body. The rectal sphincters were relaxed and percussion and palpation revealed moderate distention of the bladder. There was general impairment of the tendon reflexes in the lower extremities and absent abdominal and cremaster reflexes. The Babinski sign was negative bilaterally, and there was no abnormality in function, sensation, or reflex response in the upper extremities. There was a degree of decreased sensation in the lower extremities, extending in an irregular fashion to a point just below the knees. There were certain irregular areas of impaired sensation on both thighs. The cranial nerves were normal. The eyegrounds were examined and found normal.

Laboratory data. A lumbar puncture was done at once. The fluid was clear and under normal pressure. The cell count was 23 lymphocytes per cubic millimeter. Sugar was 78 mg. per 100 cc. The gum mastic curve showed no reaction. The Kahn test was negative.

Course. The patient's neurological symptoms improved rapidly. Within forty-eight hours the weakness had improved sufficiently to allow him to walk, and the bladder function had returned. After one week, however, he noticed some impairment in the vision of the right eye. This loss of vision increased rapidly, and on November 28, 1939, he was admitted to the North Carolina Baptist Hospital. At this time neurological examination revealed practically normal findings except for those concerned with the right eye. The pupil of this eye was widely dilated and fixed to direct light. It did react to contralateral light. Examination of the right fundus revealed a disc that showed marked hyperemia, and indistinctness of the margins. Vision was almost totally lost. The left pupil reacted promptly and normally to light and accommodation, and the left fundus showed no abnormalities. Other laboratory data were as follows: The blood sedimentation rate was 2 mm. in one hour. Red blood cells were 4,900,000; white blood cells 11,600; lymphocytes 40 per cent, polymorphonuclear leukocytes 60 per cent; hemoglobin 90 per cent. Spinal puncture was done again. The pressure was normal; the cell count showed three lymphocytes. The gum mastic reaction was normal and the Kahn test negative.

Course. The patient was given 5 cc. of aolan intramuscularly on November 29, and a second injection two days later. He was discharged on December 1 to return for further injections. Observed over a period of several weeks, the patient showed marked improvement in vision and some perceptible improvement in the condition of the affected optic disc.

Summary of Clinical Findings

There is remarkable similarity in the neurological findings observed in these three patients. In each case there was a rather sudden onset of motor weakness affecting the lower extremities: there was some degree of subjective sensory disturbance; and there was bladder paralysis. In all cases improvement was noted during the period of observation, and in one (case 3) there was within two days almost a complete remission of the neurological findings noted on the first examination. In case 3 the symptoms developed closely following an attack of influenza. The spinal fluid was examined in all cases, and in each there was a moderate lymphocytic reaction and an increase in globulin. In two cases there was an increase in the quantitative spinal fluid sugar; in the third case this test was not done. The cranial nerves were spared in cases 1 and 2. The development of acute optic atrophy in case 3 subsequent to the myelitic syndrome classifies it as a case of neuromyelitis optica. Case 2 must, of course, be presented with reservations as to its exact origin. The conflicting laboratory findings must throw some doubt on this patient's serological innocence, and the case is not presented as definitely one of disseminated encephalomyelitis. Regardless of the part which may have been played by syphilis in this case, the clinical features parallel very closely those of the other two cases.

Putnam and Alexander(1) state the characteristic pathologic picture in this condition as follows: "1. Lesions predominate in the white matter. 2. Lesions tend to occur around engorged veins . . . 3. Lesions are characterized chiefly by myelin destruction

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1. Putnam, Tracy J. and Alexander, Leo: Disseminated Encephalomyelitis. A Histologic Syndrome Associated with Thrombosis of Small Cerebral Vessels, Arch. Neurol. and Psychiat. 41:1087 (June) 1939.

and glial proliferation, but lymphocytic and hemorrhagic diapedesis may occur. 4. Thrombosis of vessels is constantly observed in the acute stage and is presumably the origin of the changes in the parenchyma." These authors have coined the phrase "encephalomyelitic reaction" to describe the various phases of this whole pathologic process.

The onset of the condition may vary greatly in different cases, as might be expected from the extremely varied combination of lesions found. The cases may show principally evidence of cerebral involvement, but more characteristically they show a predominance of symptoms referable to the cord. In certain cases there may be a combination of cord and cerebral lesion. Spiller(2) reported two cases in which the onsets were similar to those reported here—i. e., with numbness in the feet and weakness of the lower extremities.

The onset is usually acute and characterized by fever, leukocytosis, occasionally headache, and the rapid progression of the neurological picture. Bladder and bowel paralysis are frequently seen. If the involvement is principally of the anterior horn cells, the resulting neurological picture may closely simulate acute anterior poliomyelitis. The complete absence of involvement of the white matter in the latter condition usually will serve to make the differentiation.

The course is variable. In some cases there is a rapid progression of symptoms, sometimes, as Marcovitz(3) points out, simulating Landry's paralysis. This seems especially true in cases in which the onset is with paresthesias of the feet. Death may come within a few days of the onset, especially if there is bladder involvement. Many cases progress rapidly to a certain point, and then show gradual improvement over a period of months. Grinker(4) states that a majority of cases run a course of some weeks or months of progression, after which further attacks do not develop, and the damage remains static.

One of the most constant complications to be found in these cases is infection of the urinary tract. This is due in a large measure to the bladder paralysis which so often develops, with its attendant catheterizations.

Little is known of the etiology. Because of this lack of knowledge there is much difference of opinion as to classification of the various entities to be included under the group of the disseminated encephalomyelitides. Some authors feel that the condition is identical with the so-called acute form of multiple sclerosis. Hassin(5) has made an elaborate distinction between the two conditions, in association with a pathological study of a case of disseminated encephalomyelitis. He found extensive vascular infiltrations of the various elements of the central nervous system which are not to be found in multiple sclerosis. From the clinical side, however, the differential diagnosis may be difficult to make. In general, the predominance of cerebellar symptoms in multiple sclerosis is probably the best single point in differentiating the two conditions, if indeed they are different.

The diagnostic features are fairly well illustrated by the cases which are presented. The differentiation from poliomyelitis has already been touched upon. Confusion with epidemic encephalitis could not well have occurred in any of these cases because of the predominance of the cord symptoms. Cord changes are, of course, rarely seen in epidemic enchephalitis. Encephalitis also differs in that it characteristically affects the gray matter.

We know of no treatment which is of avail in this condition. General care, with special attention to the bladder and bowels, is about all we have to offer for the present. Reconstruction work, such as must be done in poliomyelitis in the advanced stages, is sometimes necessary.

Summary

Three cases of acute disseminated encephalomyelitis, one of which can be disputed because of inconclusive serological findings, have been presented. A discussion of these cases has been given. One case illustrated the syndrome known as neuromyelitis optica.

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2. Spiller, W. G., in Arch. Neurol. and Psychiat. 22:674 (October) 1929.
3. Marcovitz, Eli: The Cyclopedia of Medicine, Surgery and Specialties, Philadelphia, F. A. Davis Company.
4. Grinker, Roy R., in Tice: Practice of Medicine, Hagerstown, Md., W. F. Prior Co., 1938, vol. 10, p. 66.
5. Hassin, George B.: Disseminated Encephalomyelitis (Meningoencephalomyeloradiculitis) versus Multiple Sclerosis, Arch. Neurol. and Psychiat. 40:1111 (December) 1938.

There is no single absolutely reliable sign or symptom of activity in tuberculosis. Its determination must rest upon the most careful and thorough consideration of all of the general and local symptoms and signs, together with the results of the various laboratory and clinical studies. Miller, James Alex. N. Y. State Jour. of Med., Dec., 1939.

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AUGUST, 1940

THE CHILD THAT WILL NOT EAT

The most common problem which pediatricians have to deal with in children older than one year is lack of appetite. This is particularly true in families with only one child, or with long intervals between children. Those doctors who have to deal with such patients might get a valuable lesson from the diet experimental programs conducted by the State Board of Health at Chapel Hill and Durham. The tests demonstrated that a child could be fed on a balanced diet for 18 cents a day. In discussing the experiment, Dr. Reynolds said: "The undernourished children . . . gained an average of from two and a half to five pounds during the experiment. All appeared to be happy and wanted to return next summer." Then he made the significant statement: "Some of them were finicky when they arrived and would not eat this or that. There was no argument. Small amounts of food were placed before them—properly chosen, well-balanced food, with an adequate proportion of milk. If they ate it, all right, and if they did not, they were not given other food but had to wait until the next serving. The result was that it was not long until all were eating heartily."

Undoubtedly we doctors have been partly to blame for some of the cases of difficult feeding in children, by leaving the impression on the mother that her child needed its quota of calories and vitamins every single day. The most reliable appetite in the world will occasionally fail temporarily, under the stress of an emotional upset or during an infection, even a slight cold. To force food at such times may create a distaste that will last long afterward. The mother should be taught the elementary psychological principle of taking it for granted that her child will eat what is set before him, without argument; if he will not, he should understand that there will be no food until the next meal. Where there are several members of the family, especially children near the same age, this plan is much easier to carry out. Children are more apt to follow the example of other children than of adults; hence the readiness of the children in the State Board diet experiment to fall in line with the others.

The mother of a badly spoiled only child once suggested to her family physician that he arrange to put her offspring in the hospital with two special nurses, to see if he could not be made to eat. The doctor offered a much cheaper and better prescription: to board her child at the local orphanage for two weeks. Of the 300 children in that institution, the nurse in charge stated that none offered any feeding problem other than the task of getting enough food to go around. The suggestion was declined, however.

Dr. Reynolds has compressed a volume of wisdom into the four simple words: "There was no argument." Let us remember the story of this experiment to tell the mothers of children who will not eat.

* * * *

THE HOUSE OF DELEGATES OF THE A. M. A.

In last month's issue an editorial was devoted to the annual meeting of the American Medical Association, held in New York, June 10-15. In this editorial the statement was made that the House of Delegates is a living refutation of the often-heard statement that democracy and efficiency are incompatible. Perhaps a brief description of the procedure of that body may be of interest to our readers; for the amount of business dispatched by it is remarkable, especially in view of the absolutely democratic methods that prevail.

Before the House is called to order, the delegates from the various states have registered and presented their credentials to the Committee on Credentials. After the roll call, the Speaker of the House delivers his address and appoints a number of Reference Committees to consider and report on various phases of the business that may come before the House. The reports of the various officers of the Association and the numerous resolutions that are presented to the House are referred to the appropriate committee. Each Reference Committee, in the intervals between meetings of the House, reads and considers carefully section by section, the reports or resolutions referred to it, and formulates recommendations as to what should be adopted, amended or discarded. The time and place for the meetings of the various committees are posted conspicuously, and are open to the authors of the resolutions or reports and to any other interested A. M. A. members—not necessarily delegates—who care to give their views.

The report of each Reference Committee is presented by its chairman to a later meeting of the House, and is then open for discussion and adoption, amendment, or rejection by the entire body. There is absolutely no gag rule, and every member, veteran or freshman, is allowed to speak as often as he will.

When officers are to be chosen, nominations are made from the floor. If more than one name is presented, a vote by ballot is taken. The names are written on a blackboard, in plain view of the entire membership, and as the votes are read aloud, the tally is recorded on the blackboard by the Secretary. If there are more than two names, and one fails to get a majority, the one receiving the lowest number of votes is eliminated. The balloting is thus continued until one man gets a majority of the votes cast. The apportionment of delegates is based upon the medical population of the various states, together with one delegate each from the Medical Departments of the Army and of the Navy, from the United States Public Health Service, and from each scientific section. The total membership of the House shall not exceed 175.

It is hard to conceive of a more democratic method of forming a House of Delegates, and its order of procedure is certainly a lesson in democracy and efficiency. The uniformly high order of results obtained argue for what Dr. Joslin called "the profundity of the aggregation".

* * * *

A CHILD LOOKS AT POLITICAL MEDICINE

Twenty-eight schools of New York were represented in the annual high school poetry contest that ended in May. First prize was awarded to seventeen year old Sala Weltman. "Inspiration for her prize poem", according to the *New York Times*, "was received from an actual visit to a clinic, where, three years ago, she had a tooth pulled." Since the doctor-patient relationship is so disparaged by the proponents of political medicine, it is quite interesting to get the reaction of an intelligent child to the business methods that these propagandists advocate. For this reason her poem is printed in full:

CLINIC

Your name? Your age?
Where do you live?
Your height? Your weight?
Yes, you must give
Your mother's name,
Your father's name,
Your brother's name.
Your work? Your wage?
Your boss? Your shop?
Here, put an X
Right at the top
It means you're poor,
That's all; sit down
And wait, you're poor.
Doctor? No,
Sit down, no hurry.
Come? He'll come
Sometime, don't worry.
Time? It's eight.
Time? It's nine.
Time? It's ten.
Time? It's time.
Your name? Your age?
Hurt much? Hurt here?
Say ahhh, relax;
Lean back, draw near,
Say ahhh, breathe out——
And out—and in—
Go home? No, wait,
The nurse must have
Some facts. Please state
Your middle name,
Your mother's name,
Your father's name,
Your brother's name.——

"EDUCATING THE PUBLIC"

Within the past five years there has been such an organized effort to discredit and "smear" the medical profession that Dr. Rock Sleyster has aptly termed this period as the five years of persecution. The tremendous amount of propaganda let loose by the radio, the press, the platform and even the pulpit, all obviously intended to shake the confidence of the American people in organized medicine — particularly in the A. M. A. — must have cost a great deal of money. There is evidence to show that most of this cost has been borne by the taxpayers of the United States, since a great deal of the propaganda originated in Washington.

Whatever the outcome of the suit brought against the A. M. A. by the Department of Justice, its purpose has been accomplished —namely, to create the impression with the public that the doctors of the United States have organized solely for their own selfish interests and in utter disregard of the public welfare. Quite recently, a teacher of law who was formerly connected with the Department of Justice and who collaborated with Thurman Arnold in preparing the bill of indictment against the A. M. A., said in an Open Forum that the code of ethics of the medical profession is nothing but an arrangement to protect doctors' pocketbooks, and let the public be damned. He elaborated this statement by comparing our profession with a group of plumbers who met and agreed not to underbid one another.

If the Federal government were genuinely interested in improving the health of its subjects, it could render an untold good by using the methods of propaganda at its disposal in an honest effort to acquaint the public with the medical facilities available. The failure to obtain adequate medical care is very often due to ignorance as well as to poverty. In many communities, private practitioners, clinics, health departments, and local hospitals can provide the necessary preventive and therapeutic measures, regardless of the poverty of the patients, *if* the public is made aware of their availability.

National, state, county, and city advertising campaigns, conducted by publicity experts, are necessary to counteract the pernicious misinformation of the patent medicine radio programs and advertisements in periodicals—only too often in religious journals. In North Carolina, our people should be warned of the danger of an absolutely preventable disease—diphtheria—that took 173 lives in 1939 and 176 in 1938.

The private practitioners are not prepared to undertake this campaign of education, nor should they be expected to do so. It is preeminently the function of our public health officials—federal, state, and local. The private practitioners have consistently proved their willingness to cooperate with public health departments and with hospitals and public clinics. In return, they have every right to expect cooperation from these sources. For five years the federal government has been exerting its power to frighten people into distrusting the medical profession and demanding a radical change, with the government in charge. How much better it would be for it to use its tremendous influence in telling the people how to secure medical service, in warning them against the dangers of self-medication, and in encouraging them to select a family doctor and depend upon him for service.

* * * *

WELCOME, POWERS AND ANDERSON OF NORTH CAROLINA!

A full page advertisement in the July number of the North Carolina Medical Journal announced the opening of Powers and Anderson of North Carolina, dealers in medical and hospital supplies, at 626 West Fourth Street, Winston-Salem. The many North Carolina doctors who have known Powers and Anderson of Virginia well and favorably for years will be glad to know that this firm has established a branch in North Carolina. We feel that, with two such gentlemen as L. W. Griffin and W. S. Horton to manage it, its success is assured. With the Winchester supply house already well established in Charlotte and Greensboro, North Carolina doctors and hospitals can be sure of having their needs supplied promptly and with satisfaction.

BULLETIN BOARD

News Notes from Wake Forest College

At a joint meeting of the Board of Trustees of the North Carolina Baptist Hospital and Wake Forest College on July 18, 1940, contracts were let for the new Bowman Gray School of Medicine of Wake Forest College and additions to the Hospital, exclusive of equipment, amounting to $701,572. This together with the other portions of the physical plant when completed will provide a classroom-laboratory-hospital teaching unit at a cost of $1,360,000. The hospital will provide 300 teaching beds, with the laboratory and classroom portion of the building constructed as one unit so as to provide teaching and research for a school not to exceed 50 students per class. It is estimated that it will take approximately one year to complete the buildings.

The Junior League of Winston-Salem has leased to the Bowman Gray School of Medicine of Wake Forest College its new and up-to-date hospital of about 50 beds located in a quiet spot on the outskirts of the city for 50 years at $1 a year. The Hospital will be used by the Medical School for teaching and research in psychiatry. In consideration of the lease, the Medical School will assume responsibility for the professional conduct of the Child Guidance Clinic conducted by the Junior League. The Junior League has agreed to contribute to the non-professional costs of the clinic $7,000 per year for a period of five years. This agreement is to become effective on September 1, 1940.

Dr. Herbert S. Wells, formerly Assistant Professor of Physiology, Vanderbilt University School of Medicine, has assumed the position of Professor of Physiology and Pharmacology in the Wake Forest College School of Medical Sciences. Dr. Wells will this year be located in Wake Forest and move to Winston-Salem when the new Bowman Gray School of Medicine of Wake Forest College is opened. He is at present engaged in research on shock in connection with the National Defense Program.

News Notes from Duke University School of Medicine and Duke Hospital

On July 1, Dr. Paul G. Reque was appointed Instructor in Dermatology and Syphilology, and Miss Ruth E. Barker as Instructor in Medical Social Service.

On July 15, the new addition to the hospital was opened for full use, with 113 beds for private and semi-private patients, and offices and examining rooms for the Medical and Surgical Private Diagnostic Clinics. The wards in the new addition have been named as follows: Surgical—Cushing; Obstetrical and Gynecological — Williams and Holmes; Surgical Children — Matas; Medical — Minot; and Psychiatric—Meyer.

News Notes from the University of North Caolina

Dr. J. N. Baker, State Health Officer of Alabama, and a number of his staff, recently visited the School of Public Health in order to observe the special work being given this summer in Health Education to thirty teachers from North Carolina. This special course was a cooperative project between the State Board of Health, State Department of Education and the School of Public Health, and was financed by a grant from the General Education Board.

News Notes from the State Board of Health

Necessary equipment is being set up for the complete physical examination of approximately 1,000 men to be employed by the Aluminum Company of America on its new $10,000,000 hydro-electrical developments at Nantahala and Sylva, it was announced here Friday by Dr. Carl V. Reynolds, State Health Officer, and T. A. Wilson, Chairman of the North Carolina Industrial Commission. The work will be done by the Division of Industrial Hygiene, a conjoint activity of these two State agencies, of which Dr. T. F. Vestal and M. F. Trice are co-directors.

* * * *

Dr. J. N. Baker, State Health Officer for Alabama; Dr. B. F. Austin, Director of the Bureau of Hygiene and Nursing of the Alabama State Health Department; Dr. J. R. Sharman, Professor of Health Education in the University of Alabama, and Dr. W. M. McCall, Director of the Division of Instruction of the Alabama State Department of Education, spent a day in Durham and Chapel Hill and then visited the State Board of Health in Raleigh. They were accompanied to and from Durham and Chapel Hill by Dr. Carl V. Reynolds, State Health Officer, and were joined in Chapel Hill by Dr. Watson S. Rankin, former North Carolina State Health Officer, now of Charlotte, with the Duke Foundation, and accompanied him on a tour that took them through five or six hospitals, in different sections of the State, that are assisted by the Duke Foundation.

* * * *

Dr. D. Subba Rao, of Madras, India, connected with the public health service there, and Dr. Cemal Ali Kiper, of the School of Public Health, Ankara, Turkey, spent some time in Raleigh in July inspecting the work of the Industrial Hygiene Division, of which Dr. T. F. Vestal is the director.

* * * *

The preparedness program already has increased the requests for certified copies of birth certificates more than 200 a day, while the number continues to grow, it was stated by Dr. Carl V. Reynolds, State Health Officer. The Vital Statistics Division of the State Board of Health, of which Dr. R. T. Stimpson is the Director, reports that of these more than 100 requests daily are coming in for certificates based on delayed registrations of births, that is, certificates for persons born prior to October, 1913, when official registrations began in North Carolina on a state-wide basis.

Persons born prior to October, 1913, and those born since, whose births, for one reason or another, have not been properly recorded with the State Board of Health, are required to have filled out blanks for that particular purpose which can be secured only from the Vital Statistics Division of the State Board of Health in Raleigh.

"I feel it my duty," Dr. Reynolds said, "to bring to the public attention the requirements necessary to secure this birth certificate, thereby avoiding unnecessary delay and inconvenience on the part of those who desire the services of the State Board of Health. If you will carry out the following instructions in detail there will be no difficulty in securing prompt service:

> "Certificates must be signed by the attending physician, if possible.
>
> "The ages of the father and mother, their occupation, residence, and number of children born to the mother should be expressed as they were at the time of this birth.
>
> "The signature must be attested by an officer qualified to administer oaths.

STATE BOARD OF MEDICAL EXAMINERS

Dr. W. D. James, secretary of the Board of Medical Examiners of North Carolina, announced Saturday that the board had granted licenses to 108 physicians examined at the annual June meeting in Raleigh. The three highest averages were made by Dr. Hugh Harrison Mills of Forest City, graduate of Harvard Medical School, 94 2/7; Dr. John Joseph Smerznak of Philadelphia, graduate of Hahnemann Medical School, 93 6/7; and Dr. Joseph Johnson Eller of Warrenville, graduate of Emory University School of Medicine, 93 1/7 per cent.

THE THERMAL BELT MEDICAL SOCIETY

The Thermal Belt Medical Society met at the Spartanburg Baby Hospital, Saluda, N. C., on July 11, at 6:00 p. m. The following program was presented after dinner:

Prophylactic Use of Sulfanilamide—Dr. Frank Wood, Marion

Case Report—Dr. Ben Gold, Shelby

Presentation of Pediatric Cases in the Hospital —Dr. D. Lessene Smith, Saluda.

BUNCOMBE COUNTY MEDICAL SOCIETY

The Buncombe County Medical Society met on July 1 and July 15. At the first meeting, Dr. S. M. Bittinger, Medical Director of the Black Mountain Sanatorium, gave a paper on "Non-Tuberculous Diseases of the Lung". On July 15, Dr. S. F. Ravenel, of Greensboro, spoke on "The Complications of Acute Hemorrhagic Nephritis in Children".

GUILFORD COUNTY MEDICAL SOCIETY

Dr. Louis H. Clerf, Professor of Bronchoscopy at Jefferson Medical College, addressed the Guilford County Medical Society at its August meeting, held at the King Cotton Hotel in Greensboro on August 1. Dinner was served at 6:30.

NEWS NOTES

An editorial on "Sarcoidosis" in the **Journal of the A. M. A.** for July 27 contains a reference to an article by Dr. George T. Harrell, Medical Resident at the Duke Hospital. This article, "Generalized Sarcoidosis of Boeck, a Clinical Review of Eleven Cases, with Studies of the Blood and the Etiologic Factors", appeared in the May issue of the **Archives of Internal Medicine.**

Dr. Robert A. Ross, of Durham, has been invited to be a guest speaker for the 1940 fall program of the Post Graduate Medical Assembly of South Texas.

* * * *

Dr. Claude Oliver Abernathy of Raleigh died in a Goldsboro hospital on July 21 of injuries suffered when his car overturned.

Dr. J. G. Groome announces the association of Dr. L. U. Creech, general practice and obstetrics, in the Groome-Lackey Clinic, 507 North Main Street, High Point.

Dr. John T. Saunders announces the association of Dr. James H. Cherry. Practice limited to orthopaedic and traumatic surgery. Suite 407 Arcade Building, Asheville, N. C.

In Memoriam

DR. EUGENE KNOEFEL, SR.

Black Mountain, North Carolina

"In so much as it has pleased Divine Providence to remove our esteemed friend and co-worker, Dr. A. Eugene Knoefel, from our midst, be it resolved:

"That we bow to the Divine Will and express our gratitude that he has been spared to us for so many useful years.

"Dr. Knoefel, during his long and useful life, endeared himself to his patients and ever exemplified the true type of the family physician.

"Dr. Knoefel was a kind neighbor, an active civic-minded citizen and with his passing a most valuable and beloved member of our profession is lost to our community.

"We, his co-workers in Black Mountain, express our deepest sympathy to his faithful wife and children, joining them in their sorrow, but rejoicing with them in the hope of his eternal rest."

Dr. I. J. Archer, Dr. L. B. Beall, Dr. Sam S. Cooley, Dr. C. H. Hemphill, Dr. Margery L. Lord, Dr. George Pritchard, Dr. Frank H. Richardson, and Dr. J. B. Wright.

—Bulletin of the Buncombe County Medical Society.

DR. W. TURNER RAY

Mecklenburg County Medical Society has lost another of its promising young physicians in the sudden death of our friend and comrade, Turner Ray. Turner was presumably a victim of the doctor's scourge, coronary heart disease, in his 37th year. His sudden death occurred while he and his family were enjoying a week-end outing at Lake Lure and Chimney Rock on June 16, 1940.

Turner had been among us just five years but in this time he had established an enviable reputation. Quiet and unassuming in manner, he had made a host of friends in Charlotte and his place among his intimate associates will be difficult to fill.

Turner was born in Wake Forest, June 17, 1903, the son of Mr. and Mrs. W. L. Ray. He grew up and was educated in this college town, being graduated from Wake Forest College and received his M. D. degree from the University of Maryland in 1934. He interned in the Baltimore City Hospital and Franklin Square Hospital in Baltimore and then came to Charlotte to make his home. Turner has engaged in general practice for the last five years and until recent months he was city police surgeon. He was a member of the Phi Rho Sigma medical fraternity, M. C. M. S., North Carolina State Medical Society, and the American Medical Association. He was secretary of the Mecklenburg chapter of the Wake Forest College Alumni, in which he had always manifested an active interest. He was also a member of the Sphinx Club.

Dr. Ray is survived by his wife, who was formerly Miss Harriett Mangum of Wake Forest, and his infant son, William Turner Ray, Jr. Other survivors are his parents, Mr. and Mrs. W. L. Ray of Wake Forest; two sisters, Mrs. Basil Boyd of Charlotte and Miss Pearl Ray of Wake Forest; and one brother, Dr. Frank Ray of Charlotte.

On behalf of the Society, we extend our deepest sympathy to the family and share their sorrow in the loss of our colleague and friend.

—Bulletin of the Mecklenburg County Medical Society.

TRANSACTIONS

OF THE

MEDICAL SOCIETY

OF THE

STATE OF NORTH CAROLINA

EIGHTY-SEVENTH ANNUAL SESSION

...held at...

PINEHURST, NORTH CAROLINA

MAY 13, 14 ,15, 1940

President, William Allan, M.D., Charlotte
Secretary-Treasurer, T. W. M. Long, M.D., Roanoke Rapids

EARLY HISTORY OF THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA FROM ORGANIZATION TO 1804

Date	Place	President	Vice Presidents	Corresponding Secretary	Secretary	Recording Secretary	Treasurer	Censors
Dec. 17, 1799, or April 16, 1800	Raleigh	Richard Fenner	Nathaniel Loomia John Claiborne	Calvin Jones		Wm. B Hill	Cargill Massenburg	Sterling Wheaton James Webb Jas. John Pasteur Jason Hand
Dec. 1, 1800	Raleigh	Richard Fenner			Sterling Wheaton			
Dec. 1, 1801	Raleigh	John C. Dsborne	Thomas Mitchell Richard Fenner	Calvin Jones	Sterling Wheaton		Cargill Massenburg	James Webb John Sibley
1802	Raleigh	John C. Osborne		Calvin Jones				
1803	Raleigh	John C. Osborne		Calvin Jones				
1804	Raleigh	John C. Osborne		Calvin Jones				

HISTORY OF THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA FROM 1849 TO 1940
*Missing Data Not to be Found in Record

Date		Place of Meeting	Number in Attendance	President	Vice Presidents*	Secretary	Treasurer*	Members on Roll*	Honorary Members*	Honorary Fellows*
	1849	Raleigh	25	F. J. Hill	----	W. H. McKee	----	25	----	----
1	1850	Raleigh	21	E. Strudwick	F. J. Haywood, C. E. Johnson, J. E. Williamson, W. G. Thomas	W. H McKee	W. G. Hill	38	9	----
2	1851	Raleigh	23	E. Strudwick	C. E. Johnson	W. H. McKee	W G. Hill	46	0	--
3	1852	Wilmington	38	J. E. Williamson	Thomas N. Cameron, William G. Hill, Johnston B. Jones, N. J. Pittman	E. B. Haywood	J. J. W Tucker	72	12	----
4	1853	Fayetteville	24	J. E. Williamson	William G. Hill, Johnston B. Jones, J. B. G. Myers, N. J. Pittman	W. W. Harris	Daniel Dupree	80	14	----
5	1854	Raleigh	37	J. H. Dickson	N J. Pittman, J. B G. Myers, J. Graham Tull, A. D. McLean	S. S. Satchwell	Daniel Dupree	84	17	----
6	1855	Salisbury	23	J. H. Dickson	J. Graham Tull, Owen Hadley, A. D. McLean, Hugh Kelly	S. S. Satchwell	J. B. Dunn	96	18	----
7	1856	Raleigh	35	C. E. Johnson	Marcellus Whitehead, E. R. Gibson, Johnston B. Jones, O. F. Manson	S. S. Satchwell	J. B. Dunn	101	22	----
8	1857	Edenton	25	C. E. Johnson	Marcellus Whitehead, O. F. Manson, H. W Faison, E. T. Gibson	W. G Thomas	J. B. Dunn	113	16	----
9	1858	New Bern	69	W. H. McKee	Edward Warren, C. W. Graham, Caleb Winslow, A. B. Pierce	W. G. Thomas	J. R. Dunn	172	18	----
10	1859	Statesville	81	W. H. McKee	James G. Ramsey, P. E. Hines, J. R. Mercer, W. T. Howard	W. G. Thomas	C. W. Graham	----	----	----
11	1860	Washington	64	N. J. Pittman	P. T. Henry, R. H. Winborne, M. Whitehead, T. S. Leach	W. G. Thomas	C. W. Graham	233	18	----
12	1861	Morganton	23	N. J. Pittman	J. J. Summerell, C. T. Murphy, G. W. Hodges, W. A. B. Norcom	W. G. Thomas	C. W. Graham	244	18	----
13	1866	Raleigh	20	J. J. Summerell	E. Burke Haywood, R. H. Winborne, W. L. Barrow, J. W. Jones	W. G. Thomas	C. W. Graham	---	----	----
14	1867	Tarboro	41	W. G. Thomas	----	S. S. Satchwell	C. W. Graham	288	11	----
15	1868	Warrenton	27	S. S. Satchwell	Hugh Kelly, George A. Foote, Charles J. O'Hagan, J. H. Baker	Thomas F. Wood	J. W. Jones	----	----	----
16	1869	Salisbury	36	F. B. Haywood	Thomas E. Wilson, A. B. Pierce, C. T. Murphy, M. A Locke	Thomas F. Wood	J. W. Jones	----	----	----
17	1870	Wilmington	38	C. J. O'Hagan	E. A. Anderson, F. N. Luckey, W. R. Sharpe, R. L. Payne	Thomas F. Wood	J. W. Jones	----	----	----
18	1871	Raleigh	35	Hugh Kelley	D. N. Patterson, R. C. Pearson, J. R. Seavy, G. L. Kirby	Thomas F. Wood	J. W. Jones	----	----	----
19	1872	New Bern	34	W. G. Hill	H. W Faison, R. I. Hicks, G. H. Macon, W. A. B. Norcom	James McKee	J. W. Jones	----	----	----
20	1873	Statesville	43	M. Whitehead	W. T. Ennett, William Little, Charles Doffy, P. T. Jerman	James McKee	H. T. Bahnson	----	----	----
21	1874	Charlotte	56	W. A. B. Norcom	J. B. Jones, R. F. Lewis, C. G. Cox, J. L. Knight	James McKee	H. T Rahnson	----	----	----
22	1875	Wilson	60	J. W. Jones	Walker Debnam, J. A Gibson, William Little, D. N. Patterson	James McKee	H. T Bahnson	148	5	----
23	1876	Fayetteville	33	Peter E. Hines	J. H. Baker, G. G. Smith, T. D. Haigh, J. K. Hall	James McKee	H. T Bahnson	157	4	----
24	1877	Salem	42	George A. Foote	J. K. Hall, B. W. Robinson, A. Holmes, A. A. Hill	James McKee	A. G. Carr	177	4	----
25	1878	Goldsboro	79	R. L. Payne	E. M. Rountree, Richard Anderson, S. B. Flowers, L. A. Stith	L. J. Picot	A. G. Carr	194	6	----
26	1879	Greensboro	109	Chas. Duffy, Jr	J. A Gibson, Willis Alston, James McKee, A. A. Hill	L. J. Picot	A. G. Carr	198	6	----
27	1880	Wilmington	105	J. F. Shaffner	J. K. Hall, W. C. McDuffie, W. R. Wilson, R. F. Lewis	L. J. Picot	A. G. Carr	225	6	----
28	1881	Asheville	92	R. B. Haywood	J. E. McRee, W. H. Lilly, R. H. Speight, W. J. H. Bellamy	L. J. Picot	A. G. Carr	254	6	----
29	1882	Concord	65	Thos. F. Wood	T J. Moore, D. J. Cain, S. E. Evans, John McDonald	L. J. Picot	A. G. Carr	297	7	----
30	1883	Tarboro	112	J. K. Hall	A. W. Knox, J. M. Hadley, E. S. Foster, John Whitehead	L. J. Picot	A. G. Carr	310	7	----
31	1884	Raleigh	112	A. B. Pierce	F. W. Potter, G. W. Graham, R. Dillard, G. W. Long	L. J. Picot	A. G. Carr	348	7	----
32	1885	Durham	173	W. C. McDuffie	James McKee, T. E. Anderson, W. H. Whitehead, A. G. Carr	W. C. Murphy	R. L. Payne, Jr	424	6	----

HISTORY OF THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA FROM 1849 TO 1040—Continued
*Missing Data Not to be Found in Record

Date		Place of Meeting	Number in Attendance	President	Vice Presidents	Secretary	Treasurer	Members on Roll	Honorary Members	Honorary Fellows*
33	1886	New Bern	113	Joseph Graham	H. T. Bahnson, L. J. Picot, J. L. McMillan, W. W. Faison	J. M. Baker	R. L. Payne, Jr.	438	7	------
34	1887	Charlotte	112	H. T. Bahnson	G. G. Smith, J. L. Nicholson, C. M. Van Poole, H. B. Ferguson	J. M. Baker	R. L. Payne, Jr.	452	7	------
35	1888	Fayetteville	133	T. D. Haigh	W. T Ennett, J. A. Dunn, T. E. Anderson	J. M. Baker	C. M. Van Poole	306	6	------
36	1889	Elizabeth City	50	W. T. Ennett	W. J. Jones, S. W. Stevensoo, G. W. Long	J. M. Baker	C. M. Van Poole	410	6	------
37	1890	Oxford	160	G. G. Thomas	R. L. Payne, Jr., Richard Dillard, S. D. Booth	J. M. Hays	C. M. Van Poole	414	6	------
38	1891	Asheville	135	R. H. Lewis	S. W. Battle, J. L. Nicholson, W. H. Lilly	J. M. Hays	C. M. Vao Poole	422	6	------
39	1892	Wilmington	162	W. T. Cheatham	T. S. Burbank, J. W. Long, W. H. H. Cobb, W. D. Hilliard	J. M. Hays	C. M. Van Poole	431	6	------
40	1893	Raleigh	221	J. W. McNeill	W. C. Galloway, H. H. Harris, J. M. Hadley, Thomas Hill	R. D. Jewett	M. P. Perry	447	5	3
41	1894	Greensboro	166	W. H. H. Cobb	J. A. Hodges, R. W. Tate, Willis Alston, M. H. Fletcher	R. D. Jewett	M. P. Perry	454	5	3
42	1895	Goldsboro	------	J. H. Tucker	J. Howell Way, W. H. Harrell, O. McMullan, C. A. Misenheimer	R. D. Jewett	M. P. Perry	436	7	3
43	1896	Winston-Salem	158	R. L. Payne	S. D. Booth, J. P. Munroe, J. A. Burroughs, J. E. Grimsley	R. D. Jewett	M. P. Perry	452	7	3
44	1897	Morehead City	103	P. L. Murphy	J. C. Walton, A. A. Kent, M. R. Adams, B. L. Long	R. D. Jewett	M. P. Perry	406	6	3
45	1898	Charlotte	*	Francis Duffy	E. C. Register, A. T. Cotton, J. H B. Knight, F. H. Russell	R. D. Jewett	M. P. Perry	437	6	21
46	1899	Asheville	152	L. J. Picot	I. W. Faison, J. W. White, H. H. Dodson, W. C. Brownson	Geo. W. Presley	G. T. Sikes	489	6	16
47	1900	Tarboro	115	George W. Long	C. M. Van Poole, James M. Parrott, T. B. Williams, W. D. Hilliard	Geo. W. Presley	G. T. Sikes	482	6	21
48	1901	Durham	186	Julian M. Baker	M. H. Fletcher, C. A. Julian, D. A. Stanton, E. M. Summerell	Geo. W. Presley	G. T. Sikes	515	5	18
49	1902	Wilmington	147	Robert S. Young	A. G. Carr, E. D. Dixon-Carroll, I. M. Taylor, J. M. Parrott	Geo. W. Presley	G. T. Sikes	546	5	20
50	1903	Hot Springs	155	A. W. Knox	E. G. Moore, C. A. Juliao, W. W. McKenzie, J. L. Nicholson	J. Howell Way	G. T. Sikes	530	6	19
51	1904	Raleigh	326	H. B. Weaver	John Hey Williams, John C. Rodman, S. F. Pfohl	J. Howell Way	G. T. Sikes	1,033	8	17
52	1905	Greensboro	361	David T. Tayloe	C. A. Julian, John T. Burrus, I. W. Faison	J. Howell Way	G. T. Sikes	1,175	8	17
53	1906	Charlotte	406	E. C. Register	L. B. McBrayer, W. H. Cobb, Jr., W. O. Spencer	J. Howell Way	G. T. Sikes	1,234	8	16
54	1907	Morehead City	217	Samuel D. Booth	C. M Strong, J. E. McLaughlin, W. F. Hargrove	David A. Stanton	H. McK. Tucker	888	7	16
55	1908	Winston-Salem	372	J. Howell Way	J. E. Stokes, J. A. Turner, W. H. Dixon	David A. Stanton	H. McK. Tucker	998	7	28
56	1909	Asheville	337	J. F. Highsmith	C. M. Van Poole, D. A. Garrison, D. O. Dees	David A. Stanton	H. McK. Tucker	1,067	7	25
57	1910	Wrightsville Beach	276	J. A. Burroughs† E. J. Wood	E. J. Wood, John Q. Myers, L. D. Wharton	David A. Stanon	H. D. Walker	1,080	8	35
58	1911	Charlotte	412	C. M. Van Poole	J. V. McGougan, W. E. Warren, L. N. Glenn	David A. Stanton	H. D. Walker	880	8	45
59	1912	Hendersonville	296	A. A. Kent	J. P. Monroe, W. P. Horton, J. G. Murphy	David A. Stanton	H. D. Walker	950	8	44
60	1913	Morehead City	232	J. P. Munroe	F. R. Harris, E. S. Bullock, L. B. Morse	John A. Ferrell	H. D. Walker	1,133	8	40
61	1914	Raleigh	431	J. M. Parrott	E. T. Dickinson, J. T. J. Battle, D. E. Sevier	John A. Ferrell	H. D. Walker	1,228	8	47
62	1915	Greensboro	443	L. B. McBrayer	J. J. Phillips, C. W. Moseley, S. M. Crowell	John A. Ferrell	H. D. Walker	1,221	9	68
63	1916	Durham	406	M. H. Fletcher	J. L. Nicholson, L. N. Glenn, W. H. Hardison	Benj. K. Hays	W. M. Jones	1,228	10	79
64	1917	Asheville	280	Charles O'H. Laughinghouse	D. J. Hill, J. L. Spruill, J. H. Shuford	Benj. K. Hays	W. M. Jones	1,271	11	81
65	1918	Pinehurst	291	I. W. Faison	Wm. deB. MacNider, Jos. B. Greene, Ben F. Royal	Benj. K. Hays	W. M. Jones	1,087	11	81
66	1919	Pinehurst	335	Cyrus Thompson	J. W. Halford, T. W. Davis, A. McN. Blair	Sec.-Treas. Benj. K. Hays	Acting Sec.-Treas. L. B. McBrayer	1,306	11	100
67	1920	Charlotte	479	C. V. Reynolds	H D. Walker, F. Stanley Whitaker, Thos. I Fox	Benj. K. Hays	L. B. McBrayer	1,497	12	100
68	1921	Pinehurst	404	T. E. Anderson	C. S. Lawrence, W. H. Ward, J. M. Manning	Beoj. K. Hays	L. B. McBrayer	1,491	12	93
69	1922	Winston-Salem	507	H. A. Royster	W. T. Parrott, B. C. Nalle, J. R. McCracken	------	Sec.-Treas. L. B. McBrayer	1,571	12	100
70	1923	Asheville	356	J. W. Long	F. M. Hanes, T. C. Johnson, B. L. Long	------	L. B. McBrayer	1,592	9	101
71	1924	Raleigh	525	J. V. McGougan	J. L. Spruill,‡ Eugene B. Glenn, D. A. Garrison	------	L. B. McBrayer	1,604	9	106
72	1925	Pinehurst	550	Albert Anderson	W. L. Dunn, A. E. Bell, K. G. Averitt	------	L. B. McBrayer	1,657	10	116
73	1926	Wrightsville Beach	445	Wm. deB. MacNider	J. P. Matheson, W. W. Dawson, H. H. Bass	------	L. B. McBrayer	1,663	10	107
74	1927	Durham	653	John Q. Myers	J. W. Carroll, A. Y. Linville, C. H. Cocke	------	L. B. McBrayer	1,691	10	121
75	1928	Pinehurst	611	John T. Burrus	G. H. Macon, R. F. Leinbach, W. R. Griffin	------	L. B. McBrayer	1,738	11	143
76	1929	Greensboro	671	Thurman D. Kitchin	W. L. Dunn,‡ Asheville, D. T. Tayloe, Jr., Washington, W. D. James, Hamlet	------	L. B. McBrayer	1,666	11	146
77	1930	Pinehurst	701	L. A. Crowell	W. B. Murphy, Wm. E. Warren, N. B. Adams	------	L. B. McBrayer	1,711	11	155

HISTORY OF THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA FROM 1849 TO 1940—Continued

Date		Place of Meeting	Number in Attendance	President	President-Elect	Vice Presidents	Sec.-Treas.	Members on Roll	Honorary Members	Honorary Fellows
78	1931	Durham	714	J. G. Murphy	M. L. Stevens	C. A. Julian, Greensboro J. W. Davis, Statesville	L. B. McBrayer	1,600	10	164
79	1932	Winston-Salem	740	M. L. Stevens	Jno. B. Wright	C. W. Banner, Greensboro W. W. Sawyer, Elizabeth City	L. B. McBrayer	1,559	10	166
80	1933	Raleigh	714	Jno. B. Wright	I. H. Manning	J. R. McCracken, Waynesville	L. B. McBrayer	1,363	10	181
81	1934	Pinehurst	728	I. H. Manning	P. P. McCain	W. G. Suiter, Weldon R. L. Felts, Durham	L. B. McBrayer	1,563	10	210
82	1935	Pinehurst	706	P. P. McCain	Paul H. Ringer	H. D. Walker, Elizabeth City J. F. McKay, Buie's Creek William Allan, Charlotte	L. B. McBrayer	1,619	10	215
83	1936	Asheville	583	Paul H. Ringer	C. F. Strosnider	J. K. Pepper, Winston-Salem E. S. Bullock, Wilmington	L. B. McBrayer	1,462	10	235
84	1937	Winston-Salem	767	C. F. Strosnider	Wingate M. Johnson	C. A. Woodward, Wilson Jno. F. Brownsberger, Fletcher	L. B. McBrayer	1,503	7	253
85	1938	Pinehurst	802	Wingate M. Johnson	J. Buren Sidbury	R. B. McKnight, Charlotte J. F. Abel, Waynesville	T. W. M. Long	1,715	7	284
86	1939	Cruise to Bermuda	319	J. Buren Sidbury	William Allan	C. B. Williams, Elizabeth City M. D. Hill, Raleigh	T. W. M. Long	1,605	8	313
87	1940	Pinehurst	835	William Allan	Hubert B. Haywood	F. Webb Griffith, Asheville Frank C. Smith, Charlotte	T. W. M. Long	1,661	7	311

†Died during his term of office; succeeded by E. J. Wood, first vice president.

‡Died during term of office.

STATUS OF SOCIETY MEMBERSHIP BY COUNTIES FOR YEARS 1926-1940

COUNTY	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940
Alamance-Caswell *a*	27	30	30	32	33	33	32	29	32	30	31	30	27	34	35
Alexander *b*															
Alleghany *n*															
Anson	10	6	8	8	6	6	4	4	9	7	8	7	6	11	10
Ashe *p*	6	8	6	5	5	5	4			7					
Avery *r*	5	6	6	6	5	5	5		5	5	5	5	6	4	5
Beaufort	17	17	17	16	18	15	15	12	13	15	10	9	11	12	13
Bertie	8	8	8	6	7	9	7	8	9	11	9	8	8	7	7
Bladen	7	8	8	8	8	8	8	5	6	6	6		7	7	7
Brunswick	1	1	4	6	2	2	2	2	2	3	2				
Buncombe	102	118	120	118	113	112	105	83	107	115	106	98	103	111	108
Burke	11	11	12	12	17	17	17	17	12	10	13	18	17	18	22
Cabarrus	21	22	27	27	23	20	20	10	14	21	8	11	11	12	15
Caldwell	14	15	15	13	15	14	12	9	12	12	12	13	15	18	17
Camden *c*															
Carteret	12	12	11	11	12	12	12	12	12	11	12	10	2	3	2
Caswell *d*										11					
Catawba	16	21	16	17	13	13	16	8	16	16	16	14	19	19	15
Chatham	7	9	8	9	9	4	3	2	3	2	0	1	3	6	4
Cherokee	9	8	10	10	10	9	8	5	8	8	8	7	12	11	11
Chowan-Perquimans	9	10	9	7	8	6	7	6	7	5	4	2	5	5	3
Clay *e*															
Cleveland	19	20	20	22	23	19	22	21	20	21	22	21	25	23	27
Columbus	14	15	14	14	15	10	8	8	10	11	10	7	9	16	18
Craven	16	17	15	14	13	13	14	9	5	10	6	6	8	7	7
Cumberland	28	29	28	22	26	23	21	27	27	27	21	24	24	22	22
Currituck *s*	4	3	2	1	1	1	1								
Dare *f*															
Davidson	19	19	18	17	16	17	17	17	20	23	19	24	18	17	29
Davie *w*	4	5	5	5	5	5	6	4	2	1	1	1	4		
Duplin	13	13	9	11	9	11	7	2	2	9	2	2	4	2	4
Durham-Orange	60	64	63	65	67	76	77	76	76	85	87	81	104	110	119
Edgecombe-Nash	12	12	12	7	10	43	39	25	46	49	32	35	31	39	48
Forsyth	64	66	74	59	70	66	69	70	73	77	77	73	83	82	93
Franklin	12	10	12	11	10	9	7	7	9	8	9	9	6	3	
Gaston	40	38	39	39	36	33	37	12	28	30	21	28	38	35	35
Gates			1	2	2	2	2	2	2	2	2	2	1	2	1
Graham															
Granville	12	12	14	13	13	13	12	10	10	11	10	11	13	13	14
Greene	5	5	5	5	5	5	5	5	6	5	6	6	7	6	5
Guilford	112	119	123	130	124	124	118	91	102	99	83	109	101	108	110
Halifax	16	14	17	17	16	15	14	13	15	18	17	25	23	23	24
Harnett	12	16	16	15	14	13	15	16	14	15	10	16	12	12	16
Haywood	14	13	8	14	14	12	13	15	20	19	21	22	21	21	21
Henderson *j*	17	19	16	16	19	14	12	9	17	17	13	14	17	13	10
Henderson-Polk *g*															
Hertford	8	7	7	6	5	5	5	6	7	7	4	5	7	3	1
Hoke	10	11	12	14	14	14	12	11	13	14	13	11	10	7	10
Hyde	1	1	1	1	1	1	1		1	1					
Iredell-Alexander	29	34	37	39	38	38	39	29	38	38	39	30	31	25	27
Jackson	7	6	5	6	6	3	7	2	4	7	4	6	3	3	1
Johnston	28	24	23	18	23	25	20	19	19	21	12	9	27	25	24
Jones	4	3	3	3	3	3	3	3	3	3	3	2	1		
Lee	13	13	14	16	13	11	13	10	10	10	3	8	10	9	10
Lenoir	20	22	23	20	22	17	19	20	22	20	22	21	22	21	25
Lincoln	11	12	13	14	13	10	12	12	13	11	8	10	11	11	11
Macon-Clay	8	8	9	6	8	4	3	2	5	3	5	4	2	4	1
Madison	11	5	12	7	5	3	4	5	4	4	1		1	1	
Martin *f*	10	10	10	10	8	7	4								
Martin-Washington-Tyrrell								10	10	12	10	12	13	13	11
McDowell	7	8	7	9	12	10	10	11	10	13	10	6	10	12	13

STATUS OF MEMBERSHIP BY COUNTIES—Continued

COUNTY	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940
lecklenburg	117	104	119	125	128	124	117	104	108	116	116	125	119	119	130
litchell									3	2	3	3	2	3	3
itchell-Avery								8							
litchell-Watauga	8	7	9	8	6	5	5								
fontgomery	9	9	10	11	9	10	9	7	9	9	8	7	3	6	4
foore	21	17	20	22	17	21	21	18	22	21	19	22	21	20	19
ash *m*	32	31	30	30	33										
ew Hanover	40	41	38	32	38	37	35	25	35	39	34	36	32	39	37
orthampton	11	9	9	6	3	4	5	4	8	4	4	4	9	1	3
nslow	5	5	6	5	5	5	6	6	6	5	2	5	4	4	3
range *h*															
amlico	5	5	5	5	4	4	4	4	4	4	4	4	4	4	4
asquotank-Camden-Currituck-Dare								12	14	12	11	9		9	11
asquotank-Camden-Dare *s*	19	18	16	14	17	14	11								
ender	1	1	1	1	1	1	1	1	1	1		1	1		
erquimans *i*															
rson	7	7	7	6	6	6	6	7	7	8	7	7	8	8	9
tt	24	26	31	24	27	27	20	14	22	26	24	26	30	29	28
olk *j*	5	6	6	6	6	5	7	7	6	6	4	5	5	5	6
andolph	12	10	11	10	8	7	14	10	11	13	10	9	11	11	13
ichmond	18	18	18	14	17	17	15	16	15	16	15	17	16	15	16
obeson	31	28	28	21	24	21	22	23	25	27	28	29	34	33	35
ockingham	23	24	21	20	24	24	21	22	23	21	18	20	18	22	22
owan	40	40	42	35	35	39	33	24	34	30	27	28	26	24	27
utherford	22	24	22	22	22	21	21	19	20	21	23	22	23	23	24
ampson	14	13	13	10	13	13	14	14	14	14	14	16	16	16	18
cotland	12	12	12	12	10	11	11	11	11	11	10	11	11	10	10
tanly	13	15	14	14	16	16	13	12	16	17	18	19	18	20	16
tokes	5	7	8	6	2	6	6	1	1	1					
urry *v*	17	20	22	20	20	13	17	12							
urry-Yadkin									25	22	17	15	14	12	18
wain	1								3		4	5	3	3	
ransylvania	4	5	7	4	2	2	1	3	2	2	2		2	3	1
yrrell *k*															
nion	19	16	16	14	13	10	9	10	10	11	10	8	11	13	13
ance	12	11	11	11	12	8	7	8	9	9	8	8	6	10	10
ake	79	78	80	84	94	87	86	87	89	88	89	95	100	95	94
arren	6	6	6	6	6	6	6	5	5	6	2	2	2	2	3
ashington-Tyrrell *u*	8	6	6	5	3	3	3								
atauga *l q*															
atauga-Ashe								3	5	6	5	5	6	6	4
ayne	34	32	38	38	38	30	32	22	27	29	27	29	30	31	34
ilkes *o*	9	14	11	10	10	11	10								
ilkes-Alleghany								9	13	10	14	13	14	15	13
ilson	34	34	35	31	28	28	22	21	25	29	31	25	25	24	25
adkin *r*	2	2	3	5	10		4	1							
ancey	2	7	5	3	4	1	1		5	4	1		4		
Totals	1,666	1.691	1,738	1,669	1,694	1,600	1,559	1,363	1,563	1,619	1,462	1,503	1,715	1,605	1,661

a The figures for 1926 and after are for Alamance-Caswell; for the other years, for Alamance only; *b* See Iredell-Alexander; *c* See Pasquotank-Camden-Dare; *d* For 1926 and fter, see Alamance-Caswell; *e* See Macon-Clay; *f* See Pasquotank-Camden-Dare; *g* See Henderson or Polk for years after 1925; *h* See Durham-Orange; *i* See Chowan-Perquimans; See Henderson-Polk for 1912-1925; *k* See Washington-Tyrrell; *l* See Mitchell-Watauga; *m* See Edegcombe-Nash for 1931; for the other years Edgecombe only; *n* See Wilkes-lleghany; *o* See Wilkes-Alleghany; *p* See Watauga-Ashe; *q* See Watauga-Ashe; *r* See Mitchell-Avery; *s* See Pasquotank-Camden-Currituck-Dare; *t* See Martin-Washington-Tyrrell; See Martin-Washington-Tyrrell; *v* See Surry-Yadkin; *w* See Rowan.

ROSTER OF MEMBERS NORTH CAROLINA STATE BOARD OF HEALTH FROM ORGANIZATION IN 1877 TO 1940

Name	*Address*	*Appointed by*	*Term*
S. S. Satchwell, M.D., President	Rocky Point	State Society	1877 to 1878
Thomas F. Wood, M.D., Secretary	Wilmington	State Society	1877 to 1878
Joseph Graham, M.D.	Charlotte	State Society	1877 to 1878
Charles Duffy, Jr., M.D.	New Bern	State Society	1877 to 1878
Peter E. Hines, M.D.	Raleigh	State Society	1877 to 1878
George A. Foote, M.D.	Warrenton	State Society	1877 to 1878
S. S. Satchwell, M.D., President	Rocky Point	State Society	1878 to 1884
Thomas F. Wood, M.D., Secretary	Wilmington	State Society	1878 to 1884
Charles J. O'Hagan, M.D., President	Greenville	State Society	1878 to 1882
George A. Foote, M.D.	Warrenton	State Society	1878 to 1882
Marcellus Whitehead, M.D.	Salisbury	State Society	1878 to 1880
R. L. Payne, M.D.	Lexington	State Society	1878 to 1880
H. G. Woodfin, M.D.	Franklin	Gov. Z. B. Vance	1878 to 1880
A. R. Ledeux, Chemist	Chapel Hill	Gov. Z. B. Vance	1878 to 1880
William Cain, Civil Engineer	Charlotte	Gov. Z. B. Vance	1878 to 1880
R. L. Payne, M.D.	Lexington	State Society	1881 to 1887
M. Whitehead, M.D., President	Salisbury	State Society	1881 to 1884
S. H. Lyle, M.D.	Franklin	Gov. T. J. Jarvis	1881 to 1883
William Cain, Civil Engineer	Charlotte	Gov. T. J. Jarvis	1881 to 1883
W. G. Simmons, Chemist	Wake Forest	Gov. T. J. Jarvis	1881 to 1883
J. W. Jones, M.D., President	Wake Forest	State Society	1883 to 1889
John McDonald, M.D.	Washington	State Society	1883 to 1889
S. H. Lyle, M.D.	Franklin	Gov. T. J. Jarvis	1883 to 1885

Name	*Address*	*Appointed by*	*Term*
W. G. Simmons, Chemist	Wake Forest	Gov. T. J. Jarvis	1883 to 1885
Arthur Winslow, Civil Engineer	Raleigh	Gov. T. J. Jarvis	1884 to 1886
R. H. Lewis, M.D.	Raleigh	State Board of Health	1884 to 1886
Thomas F. Wood, M.D., Secretary	Wilmington	State Society	1885 to 1887
William D. Hilliard, M.D.	Asheville	State Society	1885 to 1891
Arthur Winslow, Civil Engineer	Raleigh	Gov. A. M. Scales	1885 to 1891
W. G. Simmons, Chemist	Wake Forest	Gov. A. M. Scales	1885 to 1887
J. H. Tucker, M.D.	Henderson	Gov. A. M. Scales	1885 to 1887
R. H. Lewis, M.D., Secretary	Raleigh	State Society	1887 to 1888
H. T. Bahnson, M.D., President	Winston	State Society	1887 to 1888
Arthur Winslow, Civil Engineer	Raleigh	Gov. A. M. Scales	1887 to 1889
W. G. Simmons, Chemist	Wake Forest	Gov. A. M. Scales	1887 to 1889
J. H. Tucker, M.D.	Henderson	Gov. A. M. Scales	1888 to 1891
J. L. Ludlow, Civil Engineer	Winston	Gov. A. M. Scales	1888 to 1891
J. H. Tucker, M.D.	Henderson	Gov. D. G. Fowle	1888 to 1891
F. P. Venable, Ph.D., Chemist	Chapel Hill	Gov. D. G. Fowle	1889 to 1893
J. L. Ludlow, Civil Engineer	Winston	Gov. D. G. Fowle	1889 to 1892
J. A. Hodges, M.D.	Fayetteville	State Society	1889 to 1893
J. M. Baker, M.D.	Tarboro	State Society	1891 to 1893
J. H. Tucker, M.D.	Henderson	Gov. T. M. Holt	1891 to 1893
F. P. Venable, Ph.D., Chemist	Chapel Hill	Gov. T. M. Holt	1891 to 1892
J. L. Ludlow, Civil Engineer	Winston	Gov. T. M. Holt	1892 to 1897
Thomas F. Wood, M.D., Secretary*	Wilmington	State Society	1891 to 1895
George G. Thomas, M.D., President	Wilmington	State Board of Health	1892 to 1895
S. Westray Battle, M.D.	Asheville	State Society	1893 to 1895
W. H. Harrell, M.D.	Williamston	State Society	1893 to 1895
John Whitehead, M.D.	Salisbury	State Board of Health	1893 to 1895
W. H. G. Lucas	White Hall	Gov. Elias Carr	1893 to 1895
F. P. Venable, Ph.D., Chemist	Chapel Hill	Gov. Elias Carr	1893 to 1895
John C. Chase, Civil Engineer	Wilmington	Gov. Elias Carr	1894 to 1897
R. H. Lewis, M.D., Secretary	Raleigh	Gov. Elias Carr	1895 to 1897
W. P. Beall, M.D.	Greensboro	Gov. Elias Carr	1895 to 1897
W. J. Lumsden, M.D.	Elizabeth City	Gov. Elias Carr	1895 to 1897
John Whitehead, M.D.	Salisbury	State Society	1895 to 1897
W. H. Harrell, M.D.	Williamston	State Society	1895 to 1897
W. P. Beall, M.D.	Greensboro	Gov. Elias Carr	1895 to 1897
R. H. Lewis, M.D., Secretary	Raleigh	Gov. Elias Carr	1897 to 1899
F. P. Venable, Ph.D., Chemist	Chapel Hill	Gov. Elias Carr	1897 to 1899
John C. Chase, Civil Engineer	Wilmington	Gov. Elias Carr	1897 to 1899
Charles J. O'Hagan, M.D.	Greenville	Gov. D. L. Russell	1897 to 1899
John D. Spicer, M.D.	Goldsboro	Gov. D. L. Russell	1897 to 1899
J. L. Nicholson, M.D.	Richlands	Gov. D. L. Russell	1899 to 1901
R. H. Lewis, M.D., Secretary	Raleigh	Gov. D. L. Russell	1899 to 1901
A. W. Shaffer, Civil Engineer	Raleigh	Gov. D. L. Russell	1899 to 1901
Charles J. O'Hagan, M.D.	Greenville	Gov. D. L. Russell	1899 to 1901
J. L. Nicholson, M.D.	Richlands	Gov. D. L. Russell	1899 to 1901
Albert Anderson, M.D.	Wilson	Gov. D. L. Russell	1899 to 1901
George G. Thomas, M.D., President	Wilmington	State Society	1899 to 1901
S. Westray Battle, M.D.	Asheville	State Society	1899 to 1901
H. W. Lewis, M.D.	Jackson	State Society	1899 to 1901
H. H. Dodson, M.D.	Milton	State Society	1901 to 1907
R. H. Lewis, M.D., Secretary	Raleigh	Gov. C. B. Aycock	1901 to 1907
W. P. Ivey, M.D.	Lenoir	Gov. C. B. Aycock	1901 to 1907
George G. Thomas, M.D., President	Wilmington	Gov. C. B. Aycock	1901 to 1905
Francis Duffy, M.D.	New Bern	Gov. C. B. Aycock	1901 to 1905
J. L. Ludlow, Civil Engineer	Winston	Gov. C. B. Aycock	1901 to 1905
S. Westray Battle, M.D.	Asheville	State Society	1901 to 1907
H. W. Lewis, M.D.	Jackson	State Society	1901 to 1907
W. H. Whitehead, M.D.	Rocky Mount	State Society	1901 to 1905
J. L. Nicholson, M.D.	Richlands	State Society	1901 to 1905
J. L. Ludlow, Civil Engineer	Winston	Gov. C. B. Aycock	1903 to 1909
J. Howell Way, M.D.	Waynesville	Gov. R. B. Glenn	1905 to 1911
W. O. Spencer, M.D.	Winston	Gov. R. B. Glenn	1905 to 1911
George G. Thomas, M.D., President	Wilmington	State Society	1905 to 1911
Thomas E. Anderson, M.D.	Statesville	State Society	1907 to 1913
R. H. Lewis, M.D.	Raleigh	Gov. R. B. Glenn	1907 to 1913
E. C. Register, M.D.	Charlotte	Gov. R. B. Glenn	1907 to 1909
David T. Tayloe, M.D.	Washington	State Society	1907 to 1913
James A. Burroughs, M.D.[1]	Asheville	State Society	1909 to 1913
J. E. Ashcraft, M.D.	Monroe	State Board of Health	1909 to 1913

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* Died in 1892, leaving a five-year unexpired term, which was filled by the Board.

[1] Died leaving unexpired term.

Name	*Address*	*Appointed by*	*Term*
J. L. Ludlow, Civil Engineer	Winston-Salem	Gov. W. W. Kitchin	1911 to 1917
J. Howell Way, M.D., President	Waynesville	Gov. W. W. Kitchin	1911 to 1917
W. O. Spencer, M.D.	Winston-Salem	Gov. W. W. Kitchin	1911 to 1917
Thomas E. Anderson, M.D.	Statesville	State Society	1911 to 1917
Charles O'H. Laughinhouse, M.D.	Greenville	State Society	1913 to 1919
R. H. Lewis, M.D.	Raleigh	Gov. Locke Craig	1913 to 1919
Edw. J. Wood, M.D.	Wilmington	Gov. Locke Craig	1913 to 1915
A. A. Kent, M.D.[2]	Lenoir	State Society	1913 to 1919
Cyrus Thompson, M.D.	Jacksonville	State Society	1913 to 1919
Fletcher R. Harris, M.D.	Henderson	State Board of Health	1915 to 1921
J. L. Ludlow, Civil Engineer	Winston-Salem	Gov. Locke Craig	1917 to 1923
J. Howell Way, M.D., President	Waynesville	Gov. T. W. Bickett	1917 to 1923
E. C. Register, M.D.[1]	Charlotte	Gov. T. W. Bickett	1917 to 1923
Thomas E. Anderson, M.D.	Statesville	State Society	1917 to 1923
Charles O'H. Laughinghouse, M.D.	Greenville	State Society	1919 to 1923
Fletcher R. Harris, M.D.[3]	Henderson	State Society	1919 to 1923
A. J. Crowell, M.D.	Charlotte	Gov. T. W. Bickett	1921 to 1923
Chas. E. Waddell, C.E.[4]	Asheville	Gov. C. Morrison	1919 to 1925
Cyrus Thompson, M.D.	Jacksonville	State Society	1919 to 1925
R. H. Lewis, M.D.	Raleigh	Gov. T. W. Bickett	1923 to 1925
E. J. Tucker, D.D.S.	Roxboro	Gov. T. W. Bickett	1923 to 1929
J. Howell Way, M.D., President	Waynesville	Gov. C. Morrison	1923 to 1929
A. J. Crowell, M.D.	Charlotte	Gov. C. Morrison	1923 to 1927
James P. Stowe, Ph.G.	Charlotte	Gov. C. Morrison	1923 to 1925
D. A. Stanton, M.D.	High Point	State Board of Health	1923 to 1929
Thomas E. Anderson, M.D.	Statesville	State Society	1923 to 1926
Charles O'H. Laughinghouse, M.D.[5]	Greenville	State Society	1925 to 1931
Cyrus Thompson, M.D.[1]	Jacksonville	State Society	1925 to 1931
D. A. Stanton, M.D.	High Point	State Society	1925 to 1931
R. H. Lewis, M.D.[1]	Raleigh	Gov. A. W. McLean	1926 to 1931
Jno. B. Wright, M.D.[6]	Raleigh	Gov. A. W. McLean	1925 to 1931
E. J. Tucker, D.D.S.[6]	Roxboro	Gov. A. W. McLean	1926 to 1927
W. S. Rankin, M.D.[4]	Charlotte	State Board of Health	1927 to 1929
L. E. McDaniel, M.D.	Jackson	State Board of Health	1927 to 1929
Chas C. Orr, M.D.	Asheville	Gov. A. W. McLean	1929 to 1935
Thomas E. Anderson, M.D.[6]	Statesville	State Society	1929 to 1935
L. E. McDaniel, M.D.[6]	Jackson	State Society	1927 to 1933
James P. Stowe, Ph.G.[6]	Charlotte	Gov. A. W. McLean	1929 to 1935
A. J. Crowell, M.D.[6]	Charlotte	Gov. O. Max Gardner	1930 to 1931
J. M. Parrott, M.D.[6]	Kinston	State Board of Health	1929 to 1935
Chas. C. Orr, M.D.[6]	Asheville	Gov. O. Max Gardner	1931 to 1935
J. M. Parrott, M.D.[5]	Kinston	State Society	1931 to 1935
C. V. Reynolds, M.D.	Asheville	State Society	1931 to 1933
L. B. Evans, M.D.	Windsor	State Society	1931 to 1933
S. D. Craig, M.D.	Winston-Salem	State Society	1931 to 1933
John T. Burrus, M.D.	High Point	Gov. O. Max Gardner	1931 to 1933
J. N. Johnson, D.D.S.	Goldsboro	Gov. O. Max Gardner	1931 to 1933
J. A. Goode, Ph.G.	Asheville	Gov. O. Max Gardner	1931 to 1933
H. L. Large, M.D.	Rocky Mount	Gov. O. Max Gardner	1931 to 1935
H. G. Baity, C.E.	Chapel Hill	Gov. O. Max Gardner	1931 to 1935
Grady G. Dixon, M.D.[7]	Ayden	Ex. Com. State Society	1931 to 1932
Grady G. Dixon, M.D.[7]	Ayden	State Society	1932 to 1935
S. D. Craig, M.D.	Winston-Salem	State Society	1933 to 1937
W. T. Rainey, M.D.	Fayetteville	State Society	1933 to 1937
J. N. Johnson, D.D.S.	Goldsboro	Gov. J. C. B. Ehringhaus	1933 to 1937
Hubert B. Haywood, M.D.	Raleigh	Gov. J. C. B. Ehringhaus	1933 to 1937
Jomes P. Stowe, Ph.G.	Charlotte	Gov. J. C. B. Ehringhaus	1933 to 1937
Grady G. Dixon, M.D.	Ayden	State Society	1935 to 1939
J. LaBruce Ward, M.D.	Asheville	State Society	1935 to 1939
H. Lee Large, M.D.	Rocky Mount	Gov. J. C. B. Ehringhaus	1935 to 1939
H. G. Baity, C.E.	Chapel Hill	Gov. J. C. B. Ehringhaus	1935 to 1939
J. N. Johnson, D.D.S.	Goldsboro	Gov. Clyde R. Hoey	1937 to 1941
Hubert B. Haywood, M.D.	Raleigh	Gov. Clyde R. Hoey	1937 to 1941
James P. Stowe, Ph.G.	Charlotte	Gov. Clyde R. Hoey	1937 to 1941
S. D. Craig, M.D.	Winston-Salem	State Society	1937 to 1941
W. T. Rainey, M.D.	Fayetteville	State Society	1937 to 1941
Grady G. Dixon, M.D.	Ayden	State Society	1939 to 1943
J. LaBruce Ward, M.D.	Asheville	State Society	1939 to 1943
H. Lee Large, M.D.	Rocky Mount	Gov. Clyde R. Hoey	1939 to 1943
H. G. Baity, Sc.D.	Chapel Hill	Gov. Clyde R. Hoey	1939 to 1943
C. C. Fordham, Jr., Ph.G.[8]	Greensboro	Gov. Clyde R. Hoey	1940 to 1943

[2] Resigned to become member of General Assembly.

[3] Resigned to become Health Officer Vance County.

[4] Resigned.

[5] Resigned to become Secretary of State Board of Health.

[6] Term terminated account reorganization State Board of Health by General Assembly.

[7] To fill vacancy caused by resignation of Dr. J. M. Parrott.

[8] To fill vacancy caused by the death of James P. Stowe, Ph.G.

ROSTER OF MEMBERS OF THE VARIOUS BOARDS OF MEDICAL EXAMINERS OF THE STATE OF NORTH CAROLINA

FIRST BOARD

James H. Dickson, Wilmington	1859-1866
Charles E. Johnson, Raleigh	1859-1866
Caleb Winslow, Hertford	1859-1866
Otis F. Manson, Townsville	1859-1866
William H. McKee, Raleigh	1859-1866
Christopher Happoldt, Morganton	1859-1866
J. Graham Tull, New Bern	1859-1866
Samuel T. Iredell, Secretary	1859-1866

SECOND BOARD

N. J. Pittman, Tarboro	1866-1872
E. Burke Haywood, Raleigh	1866-1872
R. H. Winborne, Edenton	1866-1872
S. S. Satchwell, Rocky Point	1866-1872
J. J. Summerell, Salisbury	1866-1872
R. B. Haywood, Raleigh	1866-1872
M. Whitehead, Salisbury	1866-1872
J. F. Shaffner, Salem	1866-1872
William Little, Secretary	1866-1872
Thomas F. Wood, Secretary, Wilmington	1867-1872

THIRD BOARD

Charles J. O'Hagan, Greenville	1872-1878
W. A. B. Norcom, Edenton	1872-1878
C. Tate Murphy, Clinton	1872-1878
George A. Foote, Warrenton	1872-1878
J. W. Jones, Tarboro	1872-1878
R. L. Payne, Lexington	1872-1878
Charles Duffy, Jr., Secretary, New Bern	1872-1878

FOURTH BOARD

Peter E. Hines, Raleigh	1878-1884
Thomas D. Haigh, Fayetteville	1878-1884
George L. Kirby, Goldsboro	1878-1884
Thomas F. Wood, Wilmington	1878-1884
Joseph Graham, Charlotte	1878-1884
Robert I. Hicks, Williamston[1]	1878-1880
Richard H. Lewis, Raleigh[2]	1880-1884
Henry T. Bahnson, Secretary, Salem	1878-1884

FIFTH BOARD

William R. Wood, Scotland Neck	1884-1890
Augustus W. Knox, Raleigh	1884-1890
Francis Duffy, New Bern	1884-1890
Patrick L. Murphy, Morganton	1884-1890
Willis Alston, Littleton	1884-1890
J. A. Reagan, Weaverville	1884-1890
W. J. H. Bellamy, Secretary, Wilmington	1884-1890

SIXTH AND SEVENTH BOARDS[3]

R. L. Payne, Jr., Lexington	1890-1892
George W. Purefoy, Asheville	1890-1892
George G. Thomas, Wilmington	1890-1894
Robert S. Young, Concord	1890-1894
William H. Whitehead, Rocky Mount	1890-1896
George W. Long, Graham	1890-1896
L. J. Picot, Secretary, Littleton	1890-1896
Julian M. Baker, Tarboro	1892-1898
H. B. Weaver, Secretary, Asheville	1892-1898
J. M. Hays, Greensboro[4]	1894-1897
Kemp P. Battle, Jr., Raleigh[5]	1897-1900
Thomas S. Burbank, Wilmington[1]	1894-1898
Richard H. Whitehead, Chapel Hill[6]	1896-1898
William H. H. Cobb, Goldsboro[6]	1898-1900
J. Howell Way, Secretary, Waynesville[7]	1898-1902
David T. Tayloe, Washington	1896-1902
Thomas E. Anderson, Sec., Statesville	1896-1902
Albert Anderson, Wilson[8]	1898-1902
Edward C. Register, Charlotte[8]	1898-1902
Thomas S. McMullan, Hertford[8]	1900-1902
John C. Walton[8]	1900-1902

EIGHTH BOARD

A. A. Kent, Lenoir	1902-1908
Charles O'H. Laughinghouse, Greenville	1902-1908
M. H. Fletcher, Asheville	1902-1908
James M. Parrott, Kinston	1902-1908
J. T. J. Battle, Greensboro	1902-1908
Frank H. Russell, Wilmington	1902-1908
George W. Pressly, Secretary, Charlotte[1]	1902-1906
G. T. Sikes, Secretary, Grissom[9]	1906-1908

NINTH BOARD

Lewis B. McBrayer, Asheville	1908-1914
John C. Rodman, Washington	1908-1914
William W. McKenzie, Salisbury	1908-1914
Henry H. Dodson, Greensboro	1908-1914
John Bynum, Winston-Salem	1908-1914
J. L. Nicholson, Richlands	1908-1914
Benj. K. Hays, Secretary, Oxford	1908-1914

TENTH BOARD

Isaac M. Taylor, Morganton	1914-1920
John Q. Myers, Charlotte	1914-1920
Jacob F. Highsmith, Fayetteville	1914-1920
Martin L. Stevens, Asheville	1914-1920
Charles T. Harper, Wilmington[4]	1914-1915
Edwin G. Moore, Elm City[10]	1915-1920
John G. Blount, Washington[11]	1914-1920
Hubert A. Royster, Secretary, Raleigh	1914--920

ELEVENTH BOARD

Lester A. Crowell, Lincolnton	1920-1926
William P. Holt, Duke	1920-1926
J. Gerald Murphy, Wilmington	1920-1926
Lucius N. Glenn, Gastonia	1920-1926
Clarence A. Shore, Raleigh	1920-1926
William M. Jones, Greensboro	1920-1926
Kemp P. B. Bonner, Sec., Morehead City	1920-1926

TWELFTH BOARD

Paul H. Ringer, Asheville	1926-1932
W. Houston Moore, Wilmington	1926-1932
T. W. M. Long, Roanoke Rapids	1926-1932
W. W. Dawson, Grifton[4]	1926-1932
J. K. Pepper, Winston-Salem	1926-1932
Foy Roberson, Durham	1926-1932
John W. McConnell, Secretary, Davidson	1926-1932
David T. Tayloe, Jr., Washington[12]	1930-1932

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[1] Resigned before expiration of term.

[2] Elected for unexpired term of Dr. Hicks.

[3] In 1890 the Medical Society of the State of North Carolina adopted the plan of electing members of the Board in such a manner that the terms would expire at different intervals of two years. This practice was followed for twelve years, or until 1902, when the plan was abandoned; an equivalent of two terms of six years each. It is evident that the Society arranged to abandon the policy as early as 1898, as two members were elected for short terms, and two years later two other members were elected for still shorter terms. It is therefore impossible to separate the sixth and seventh Boards, since the membership was overlapping.

[4] Died before the expiration of his term.

[5] Elected to serve unexpired term of Dr. Hays.

[6] Elected to serve the unexpired term of Dr. Burbank.

[7] Elected to serve the unexpired term of Dr. Whitehead.

[8] Elected for short term expiring in 1902.

[9] Elected to serve the unexpired term of Dr. Pressly.

[10] Elected to serve the unexpired term of Dr. Harper.

[11] Died a few months before the expiration of his term; such a short time that the vacancy was not filled.

[12] Elected to serve unexpired term of Dr. W. W. Dawson.

THIRTEENTH BOARD

Ben F. Royal, Morehead City	1932-1938
Benj. J. Lawrence, Secretary, Raleigh	1932-1938
F. Webb Griffith, Asheville	1932-1938
Hamilton W. McKay, Charlotte	1932-1938
J. W. Vernon, Morganton	1932-1938
W. H. Smith, Goldsboro	1932-1938
K. G. Averitt, Cedar Creek[4]	1932-1938
Roscoe D. McMillan, Red Springs[13]	1936-1938

FOURTEENTH BOARD

Karl B. Pace, Greenville	1938-1944
William M. Coppridge, Durham	1938-1944
Frank A. Sharpe, Greensboro	1938-1944
Lewis W. Elias, Asheville	1938-1944
J. Street Brewer, Roseboro	1938-1944
W. D. James, Hamlet	1938-1944
L. A. Crowell, Jr., Lincolnton	1938-1944

[13] Elected to serve unexpired term of Dr. Averitt.

MOORE COUNTY MEDICAL SOCIETY MEDAL

In 1927 the Moore County Medical Society kindly put up enough money, the interest from which would pay for a medal to be given for the best paper read before the meeting each year. No one is eligible to receive this medal except Fellows of the Medical Society of the State of North Carolina in good standing; no invited guest is allowed to compete.

Each Section Chairman selects a committee of three to pass on the best paper written in their section. These six papers are then turned over to the State Committee who pass on the best of the six papers, the winner in this instance to receive the medal. The following Fellows have been awarded this medal:

1928—Paul Pressly McCain, M.D.............Sanatorium
"The Diagnosis and Significance of Juvenile Tuberculosis"
(From Section on Pediatrics)

1929—A. B. Holmes, M.D.............Fairmont
"The Treatment of Uremia"
(From Section on Chemistry, Materia Medica and Therapeutics)

1930—C. T. Smith, M.D., and W. Bernard Kinlaw, M.D.............Rocky Mount
"The Clinical Consideration of Anaemia of Pregnancy and of Puerperium"
(From Section on Practice of Medicine)

1931—F. C. Smith, M.D.............Charlotte
"Practical Value of Perimetry in Intracranial Conditions; Case Reports" (tumors, vascular disease, toxemia, syphilis and trauma)
(From Section on Eye, Ear, Nose and Throat)

1932—Charles I. Allen, M.D.............Wadesboro
"An Improved Splint for Treating Fractures of the Lower Extremity Showing Reduction and Skeletal Distraction Attachments"
(From Section on Surgery)

1933—H. F. Sloan, M.D.............Charlotte
"Some General Remarks about Cataract Surgery, With Report of 100 Consecutive Uncomplicated Cataract Operations"
(From Section on Ophthalmology and Otolaryngology)

J. R. Adams, M.D.............Charlotte
"Hypo-glycaemia in Children"
(From Section on Pediatrics)

1934—Fred E. Motley, M.D.............Charlotte
"Complications of Mastoiditis with Special Reference to Septicemia"
(From Section on Ophthalmology and Otolaryngology)

1935—Arthur H. London, M.D.............Durham
"The Composition of an Average Pediatrics Practice"
(From Section on Pediatrics)

1936—V. K. Hart, M.D.............Charlotte
"Etiological and Therapeutic Aspects of Bronchiectasis with Clinical Observations on Bronchial Lavage by the Stitt Method"
(From Section on Ophthalmology and Otolaryngology)

1937—No award made.

1938—O. Hunter Jones, M.D.............Charlotte
"Pelvic Architecture and Classification with its Practical Application"
(From Section on Gynecology and Obstetrics)

1939—Donnell B. Cobb, M.D.............Goldsboro
"Vaginal Ureterolithotomy"
(From Section on Surgery)

OFFICERS

OFFICERS 1939-1940

President—William Allan, M.D.............Charlotte
President-Elect—Hubert B. Haywood, M.D...Raleigh
First V. Pres.—F. Webb Griffith, M.D.........Asheville
Second V. Pres.—Frank C. Smith, M.D.......Charlotte
Sec.-Treas.—T. W. M. Long, M.D.....Roanoke Rapids

OFFICERS 1940-1941

President—Hubert B. Haywood, M.D.............Raleigh
President-Elect—F. Webb Griffith, M.D.....Asheville
First V. Pres.—D. W. Holt, M.D.............Greensboro
Second V. Pres.—T. C. Kerns, M.D..............Durham
Sec.-Treas.—T. W. M. Long, M.D.....Roanoke Rapids

COUNCILLORS 1940-1943

First District—H. D. Walker, M.D., Elizabeth City
Second District—Thomas Leslie Lee, M.D., Kinston
Third District—W. Houston Moore, M.D., Wilmington
Fourth District—G. W. Mitchell, M.D., Wilson
Fifth District—J. G. Pate, M. D., Gibson
Sixth District—George L. Carrington, M.D., Burlington
Seventh District—Robert H. Crawford, M.D., Rutherfordton
Eighth District—James H. McNeill, M.D., North Wilkesboro
Ninth District—I. E. Shafer, M.D., Salisbury
Tenth District—Harold S. Clark, M.D., Asheville

SECTION CHAIRMEN

Public Health and Education—Geo. H. Sumner, M.D., Asheboro
General Practice of Medicine and Surgery—H. C. Thompson, M.D., Shelby
Surgery—R. O. Lyday, M.D., Greensboro
Pediatrics—B. W. Roberts, M.D., Durham
Practice of Medicine—C. D. Thomas, M.D., Sanatorium
Gynecology and Obstetrics—W. L. Thomas, M.D., Durham
Ophthalmology and Otolaryngology — H. L. Cook, M.D., Greensboro

DELEGATES TO THE AMERICAN MEDICAL ASSOCIATION

Wingate M. Johnson, M.D. (1940-1941), Winston-Salem
W. T. Rainey, M.D. (1940-1942), Fayetteville
Ross McElwee, M.D., Alternate, Statesville
Charles Armstrong, M.D., Alternate, Salisbury

DELEGATES TO THE MEDICAL SOCIETY OF VIRGINIA

T. L. Carter, M.D.	Gatesville
John B. Ray, M.D.	Leaksville
B. C. Willis, M.D.	Rocky Mount
George Erick Bell, M.D.	Wilson

DELEGATES TO THE SOUTH CAROLINA MEDICAL SOCIETY

D. H. Bridger, M.D.	Bladenboro
J. A. Elliott, M.D.	Charlotte
J. L. Blair, M.D.	Gastonia

COMMITTEES

Advisory to the Industrial Commission

J. F. Highsmith, M.D., Chairman	Fayetteville
M. A. Pittman, M.D.	Wilson
Newsom P. Battle, M.D.	Rocky Mount

Advisory Committee on Maternity and Infancy for the Children's Bureau

Aldert S. Root, M.D., Chairman	Raleigh
W. Z. Bradford, M.D.	Charlotte
J. Street Brewer, M.D.	Roseboro

Advisory to Woman's Auxiliary

Caroline McNairy, M.D., Chairman	Lenoir
C. F. Strosnider, M.D.	Goldsboro
J. W. Huston, M.D.	Asheville
T. W. M. Long, M.D.	Roanoke Rapids

Cancer

H. B. Ivey, M.D., Chairman	Goldsboro
C. C. Carpenter, M.D.	Winston-Salem
Thomas Leslie Lee, M.D.	Kinston

Commercializing Drugs

James M. Northington, M.D., Chairman	Charlotte
Julian A. Moore, M.D.	Asheville
Aldert S. Root, M.D.	Raleigh

Finance

Vance P. Peery, M.D., Chairman	Kinston
G. Westbrook Murphy, M.D.	Asheville
W. M. Coppridge, M.D.	Durham

Hospitals

J. B. Whittington, M.D., Chairman	Winston-Salem
W. I. Wooten, M.D.	Greenville
R. T. Ferguson, M.D.	Charlotte

Industrial Health

H. F. Easom, M.D., Chairman	Sanatorium
M. T. Plyler, M.D.	Nashville
John Donnelly, M.D.	Charlotte

Legislation

Donnell B. Cobb, M.D., Chairman	Goldsboro
Geo. L. Carrington, M.D.	Burlington
W. B. Dewar, M.D.	Raleigh

Medical Society Foundation

L. C. Skinner, M.D. (1939-1943)	Greenville
R. L. Pittman, M.D. (1939-1942)	Fayetteville
John Q. Myers, M.D. (1939-1941)	Charlotte
Ross S. McElwee, M.D. (1940-1944)	Statesville

Mental Hygiene

J. W. Vernon, M.D., Chairman	Morganton
A. B. Choate, M.D.	Charlotte
E. A. MacMillan, M.D.	Winston-Salem

Moore County Medical Society Medal

Thurman D. Kitchin, M.D., Chairman	Wake Forest
I. H. Manning, M.D.	Chapel Hill
Wingate M. Johnson, M.D.	Winston-Salem

Obituaries

J. B. Cranmer, M.D., Chairman	Wilmington
Ben J. Lawrence, M.D.	Raleigh
Paul H. Ringer, M.D.	Asheville

Post-Graduate Medical Study

William H. Smith, M.D., Chairman	Goldsboro
R. F. Leinbach, M.D.	Charlotte
W. R. Berryhill, M.D.	Chapel Hill
W. C. Davison, M.D.	Durham
C. C. Carpenter, M.D.	Winston-Salem

Printing

T. W. M. Long, M.D., Chairman	Roanoke Rapids
B. C. Willis, M.D.	Rocky Mount
Wingate M. Johnson, M.D.	Winston-Salem

Public Relations

D. W. Holt, M.D., Chairman	Greensboro
T. W. M. Long, M.D.	Roanoke Rapids
P. P. McCain, M.D.	Sanatorium

Social Security

Forrest M. Houser, M.D., Chairman	Cherryville
Paul H. Ringer, M.D.	Asheville
W. C. Bostic, M.D.	Forest City
T. G. Upchurch, M.D.	Smithfield
Ben J. Lawrence, M.D.	Raleigh
Paul F. Whitaker, M.D.	Kinston
M. P. Whichard, M.D.	Edenton
K. B. Pace, M.D.	Greenville
Geo. L. Carrington, M.D.	Burlington
Thos. L. Carter, M.D.	Gatesville
T. W. M. Long, M.D.	Roanoke Rapids

Socialized Medicine

James W. Vernon, M.D., Chairman	Morganton
Roscoe D. McMillan, M.D.	Red Springs
Hamilton W. McKay, M.D.	Charlotte

Syphilis Control

J. C. Knox, M.D., Chairman	Raleigh
Hamilton W. McKay, M.D.	Charlotte
J. Roy Hege, M.D.	Winston-Salem

Tuberculosis

S. M. Bittinger, M.D., Chairman	Black Mountain
P. A. Yoder, M.D.	Winston-Salem
J. H. Williams, M.D.	Clinton

BOARD OF MEDICAL EXAMINERS FOR NURSES

President — Miss Josephine Kerr, R.N., Charlotte
Secretary-Treasurer and Education Director—Miss Bessie M. Chapman, R.N., Raleigh
B. C. Willis, M.D. (From Hospital Association), Rocky Mount
Roscoe D. McMillan, M.D. (From Medical Society, 1940-1942), Red Springs

BOARD OF MEDICAL EXAMINERS OF THE STATE OF NORTH CAROLINA, 1938-1944

Karl B. Pace, M.D.	Greenville
W. M. Coppridge, M.D.	Durham
Frank A. Sharpe, M.D.	Greensboro
Lewis W. Elias, M.D.	Asheville
J. Street Brewer, M.D.	Roseboro
W. D. James, M.D.	Hamlet
L. A. Crowell, Jr., M.D.	Lincolnton

ARRANGEMENTS

T. W. M. Long, M.D., Chairman	Roanoke Rapids
Place of Meeting	Pinehurst

Date of Meeting—To be determined by the Executive Committee

SESSIONS OF THE HOUSE OF DELEGATES

MONDAY EVENING SESSION

May 13, 1940

The meeting of the House of Delegates, Eighty-Seventh Annual Session of the Medical Society of the State of North Carolina, convened at eight-fifteen o'clock, Dr. William Allan, President, presiding.

President Allan: The House of Delegates will come to order. We will call the roll by counties. Please answer promptly if you are a delegate, and if the delegates are not here, answer promptly that you are serving in their place.

Secretary-Treasurer Long called the roll as follows:

County	*Delegate*
Alamance-Caswell	S. C. Spoon
Anson	——— ———
Avery	——— ———
Beaufort	D. E. Ford
Bertie	J. E. Smith
Bladen	D. H. Bridger
Buncombe	G. W. Murphy, C. H. Cocke, J. B. Greene, P. H. Ringer, H. H. Briggs.
Brunswick	——— ———
Burke	James W. Vernon
Cabarrus	——— ———
Caldwell	C. R. Hedrick
Carteret	B. F. Royal, R. P. B. Bonner
Catawba	C. L. Hunsucker
Cherokee	——— ———
Chowan-Perquimans	——— ———
Cleveland	——— ———
Columbus	——— ———
Craven	R. S. McGeachy
Cumberland	Seavy Highsmith
Davidson	E. J. McPhail
Davie	——— ———
Duplin	——— ———
Durham-Orange	C. E. Gardner, W. M. Coppridge, T. C. Kerns, W. C. Davison.
Edgecombe-Nash	Newsom Battle
Forsyth	J. F. Belton, B. N. Jones, V. M. Long, J. K. Pepper.
Franklin	——— ———
Gaston	McT. G. Anders, J. L. Blair
Gates	T. L. Carter
Granville	——— ———
Greene	——— ———
Guilford	Philip Davis, M. D. Bonner, R. O. Lyday, Fred Patterson, B. E. Rhudy.
Halifax	W. G. Suiter
Harnett	——— ———
Haywood	D. W. Smith
Henderson	——— ———
Hertford	——— ———
Hoke	R. A. Matheson
Hyde	——— ———
Iredell-Alexander	Ross McElwee
Jackson	——— ———
Johnston	——— ———
Jones	——— ———
Lee	J. F. Foster
Lenoir	Thomas L. Lee
Lincoln	A. M. Cornwell
McDowell	J. H. Jonas
Macon-Clay	——— ———
Madison	——— ———
Martin-Washington-Tyrell	——— ———
Mecklenburg	P. M. King, Joseph A. Elliott, T. C. Bost, C. N. Peeler
Mitchell	——— ———
Montgomery	——— ———
Moore	W. E. Overcash
New Hanover	J. B. Sidbury, J. B. Cranmer
Northampton	——— ———
Onslow	——— ———
Pamlico	——— ———
Pasquotank-Camden-Currituck-Dare	C. B. Williams
Pender	——— ———
Person	J. D. Fitzgerald
Pitt	W. I. Wooten
Polk	——— ———
Randolph	——— ———
Richmond	W. D. James
Robeson	L. R. Hedgpeth, R. D. McMillan
Rockingham	W. S. Hester
Rowan	J. W. Frazier
Rutherford	——— ———
Sampson	J. S. Brewer
Scotland	E. A. Livingston
Stanly	——— ———
Stokes	——— ———
Surry-Yadkin	T. C. Britt
Swain	——— ———
Transylvania	——— ———
Union	J. P. U. McLeod
Vance	H. A. Newell
Wake	M. D. Hill
Warren	——— ———
Watauga-Ashe	——— ———
Wayne	D. B. Cobb, W. H. Smith, C. F. Strosnider.
Wilkes-Alleghany	J. H. McNeill
Wilson	W. C. Hunter
Yancey	——— ———

Secretary-Treasurer Long: Mr. President, there is a quorum present.

President Allan: In which case I declare the House open for business.

President's Report to the House of Delegates

Members of the House of Delegates:

You appointed a Committee last year to establish a medical journal, with the help of the Executive Committee. In pursuance of these instructions, the Executive Committee has held one meeting during the year to agree to the plans submitted by the Journal Committee and in order to authorize the necessary funds. As you know, under the editorship of Dr. Wingate Johnson and his able editorial board, the journal has gotten off to a magnificent start.

The death of our beloved member, Dr. M. L. Stevens of Asheville, has left vacant the place of one of the delegates to the A. M. A., and I suggest that the Secretary, the only continuous officer of this Society, should always be one of the delegates to the A. M. A. I might take this occasion to say that I think there is no more efficient secretary anywhere in the country than Dr. T. W. M. Long.

I should like to make some further suggestions to the House in regard to the arrangements of our Annual Scientific Program. It seems to me that our three main subjects—Medicine, Surgery, and Gynecology and Obstetrics—have much too little consideration on our program; they have, each, a three hours' session, which allows the presentation of six papers. This same amount of time is allowed to the various specialties, in which only a small fraction of our membership is interested. Conversely, I feel that a great deal too much time is given over to the General Sessions, the programs of which are made up by appointments from the Chairmen of the various Sections. This necessarily leads to cumbersome and very disjointed programs, some of which is worthwhile and some not. My suggestions are that after the Opening Session and the Presidential Address on the first day, lasting thirty minutes, Medicine, Surgery, and Gynecology and Obstetrics have morning and afternoon sessions that day; that the Ophthalmologists and Otolaryngologists meet the afternoon of the first day; that one General Session be held from 9 a. m. until noon on the second day, when the conjoint meeting with the State Board of Health takes place, and that the program of this General Session be placed in the hands of the President; that the Section on Public Health and Education be abolished, since all of the first day of our meeting is given over to Public Health; and that the remaining Sections, Pediatrics and General Practice, meet the afternoon of the second day; that the House of Delegates meet at 4:30 the second afternoon to hear the report of the Nominating Committee, and that adjournment be taken at five o'clock.

It seems queer to me that all the Committees of this Society should be suggested by the Nominating Committee. As a usual thing, any chief executive will have to delegate a good deal of his activities to various committees, and it is these committees that constitute his official household. I think he should appoint them.

Next we will have the report of the Secretary-Treasurer.

Secretary-Treasurer Long:

Secretary's Report

Three years ago you elected me your Secretary and Treasurer. Now it is my duty to give to you an account of my stewardship.

At that time, December 31, 1936, the membership of the State Society was 1462; our bank balance, $4,449.92; and our annual dues, $10.00. On December 31, 1939, our membership was 1737; our bank balance, $12,085.56; and our annual dues, which were reduced in 1938, $8.00. While our bank balance is comfortable, I feel that it would be unwise to reduce our annual dues until such time as the Journal may become self supporting.

I wish to take this occasion to say what a high privilege it has been to have served under Presidents Wingate Johnson, Buren Sidbury, and William Allan. All three of them have borne with my shortcomings; and due to their advice and counsel, the work of my office has been made easy.

Our Journal, under the able leadership of Wingate Johnson and his Editorial Board, has gotten off to a splendid start, and from comments, not only from within the state but from all parts of the country, all of us can feel justly proud of this achievement. Having served as Business Manager of the Journal, I feel that the appropriation that has been made in the past for the Transactions should be allocated to the Journal for this fiscal year. The last House of Delegates authorized the printing of an abbreviated Transactions; that is, the minutes of the House of Delegates and the Executive Committee, our historical material, and a Roster of Membership. I believe it economical that this method be continued and that in the future this material appear either as an issue or a supplementary issue of the Journal. If this policy is pursued, it will be possible to save a considerable sum annually in printing, and I so recommend this departure.

Due to the short space of time allotted under our Constitution for the meeting of the House of Delegates, it has become impossible for that body to give proper consideration to the increasing business of the Society. As most of the Delegates lose the entire day from home in coming to the meeting, I hereby recommend to you that the By-Laws be changed so that in the future the House of Delegates will meet at 2:00 p. m. on the afternoon of the first day of the Session in addition to the usual meetings. By way of explanation, we could meet at two in the afternoon—certainly not later than three—carry on our business until five-thirty or six, adjourn for dinner, and come back at eight o'clock. Then this meeting won't be jammed, and deliberation can be given to the business of the Society.

During the past year I have attended most of the District and a part of the County Meetings and have contacted a majority of our members, and it is a happy privilege to report the fine spirit of fellowship existing throughout the entire State.

Attached hereto is the report of our auditors, which shows that the financial condition of the Society is sound and that we have lived within our budget.

Respectfully submitted,
T. W. M. LONG,
Secretary-Treasurer.

AUDITOR'S REPORT ON THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

CASH RECEIPTS AND DISBURSEMENTS AND COMPARISON WITH BUDGET YEAR ENDED DECEMBER 31, 1939

	Budget Provisions For Year 1939	*Actual Receipts and Disbursements*	*Budget Provided and /or Under /Over Expended*
RECEIPTS:			
Dues (Refunds $63.00 Deducted From Actual Receipts)	$12,000.00	$11,817.00	$ 183.00
Refund From Legislative Committee (1938)		466.68	466.68
Final Dividend From Page Trust Company		271.02	271.02
Interest on Certificate of Deposit		125.00	125.00
Total Receipts	$12,000.00	$12,682.70	$ 682.70
DISBURSEMENTS:			
All Officers Except Secretary:			
Stationery	$ 100.00	$ 103.72	$ 3.72
Councillors:			
Travel	$ 250.00	$ 225.00	$ 25.00
Legislative Committee	$ 1,000.00	$ --------	$ 1,000.00
Executive Committee:			
Misc. Expenses	$ 650.00	$ 224.80	$ 425.20
Other Committees:			
Misc. Expenses	$ 600.00	$ 343.20	$ 256.80
Editorial Bd. Expenses		432.75	432.75
Total	$ 600.00	$ 775.95	$ 175.95
President's Office:			
Travel	$ 400.00	$ 400.00	$ --------
Secretary's Office:			
Salary	$ 1,200.00	$ 1,200.00	$ --------
Clerical Assistance	1,200.00	1,200.00	--------
Stationery	100.00	100.00	--------
Rent	300.00	300.00	--------
Travel	600.00	600.00	--------
Auditing	50.00	31.50	18.50
Miscellaneous and Emergency:			
Telephone		185.02	--------
Postage		141.70	--------
Office Supplies		162.77	--------
Films, Etc.—State Meeting	900.00	121.58	208.24
Treasurer's Bond		25.00	--------
Taxes (O. A. B. and Intangible		35.39	--------
Flowers		20.30	--------
Total	$ 4,350.00	$ 4,123.26	$ 226.74

State Meeting: Expenses	$ 500.00	$ 487.21	$ 12.79
A. M. A. Delegates	$ 200.00	$ 200.00	--------
Expenses of Guest Speakers	$ 100.00	$ 100.00	--------
Transactions:			
Reporting and Preparation of Copy	$ 600.00	$ 573.94	$ 26.06
Printing and Binding	3,500.00	1,500.00	2,000.00
Total	$ 4,100.00	$ 2,073.94	$ 2,026.06
Total Disbursements	$12,250.00	$ 8,713.88	$ 3,536.12
Excess of Receipts Over Disbursements for the Year—(To Exhibit "B")	$ 250.00	$ 3,988.82	$ 4,218.82

AVAILABILITY OF FUNDS—DECEMBER 31, 1939

Unencumbered and Unappropriated Funds—Held January 1, 1939:		
Funds on Deposit—Checking Account	$3,116.74	
Certificate of Deposit	5,000.00	$ 8,116.74
Add—Exeess of Actual Receipts Over Disbursements For The Year (Per Exhibit "A")		3,068.82
Unencumbered and Unappropriated Funds—Held December 31, 1639		$12,085.56

Balance—December 31, 1939 Composed of:	
Funds on Deposit—	
Citizens Bank & Trust Company, Roanoke Rapids, N. C.	
Checking Account (Per Exhibit "C")	$ 6,085.56
Certificate of Deposit No. 58	1,000.00
Certificate of Deposit No. 59	5,000.00
Total	$12,085.56

RECONCILIATION OF FUNDS ON DEPOSIT WITH BANK
DECEMBER 31, 1939

Citizens Bank & Trust Company
Roanoke Rapids, N. C.

Balance—Per Bank Statement			$ 6,707.82
Deduct—Outstanding Checks:			
Number	*Payee*	*Amount*	
375	L. L. Parks	$ 8.00	
376	Roanoke News Company	14.50	
377	Shell, Postmaster	99.76	
378	Edwards & Broughton Co.	500.00	622.26
Balance—Per Records of Treasurer (Per Exhibit "B")			$ 6,085.56

CERTIFICATES OF DEPOSIT

	Dated	*Due*	*Interest Rate*	*Amount*
No. 58	Jan. 17, 1939	Jan. 17, 1940	2½%	$1,000.00
No. 59	Feb. 8, 1939	Feb. 8, 1940	2½%	5,000.00

President Allan: Gentlemen, you have heard the report and the suggestions of the Secretary. What are your wishes?

. . . It was moved and seconded that the report be accepted.

Secretary-Treasurer Long: The next item on the program, Mr. President, is a recess for the selection of members of the Nominating Committee. That ought to take ten minutes.

President Allan: There will be a recess of ten minutes, and the men from each district will get together and appoint their members for the Nominating Committee. You will report to the Secretary at once.

. . . A recess was taken at this point . . .

President Allan: Sit down, please, and come to order.

Secretary-Treasurer Long: Mr. President, the following have been turned in for the Nominating Committee:

First District—H. D. Walker
Second District—W. I. Wooten
Third District—J. S. Brewer
Fourth District—D. B. Cobb
Fifth District—Roscoe McMillan
Sixth District—S. C. Spoon
Seventh District—J. A. Elliott
Eighth District—J. K. Pepper
Ninth District—R. S. McElwee
Tenth District—G. W. Murphy

The President asks that the Committee report to Dr. G. W. Murphy (who will act purely as a temporary chairman) immediately after this meeting in order to fix a time and place for your first meeting.

President Allan: In approving the report of the Secretary-Treasurer, which included a suggestion that we have our first business meeting in the afternoon instead of at night, it becomes necessary to amend the By-Laws. I will entertain a motion from Dr. Royal that those By-Laws be amended.

Dr. Royal: I move that Chapter 4, Section 1 of the By-Laws, the last sentence of the section, be amended. The sentence at present reads as follows: "The first session of the House of Delegates shall be held at eight p. m. the day preceding the meeting of the Society at which session as much as possible of the business of the House shall be transacted."

I move that that sentence of Section 1 of Chapter 4 be amended to read as follows: "The first session of the House of Delegates shall be held at two p. m. the day preceding the meeting of the Society at which session as much as possible of the business of the House shall be transacted."

. . . The motion was duly seconded and carried.

President Allan: For some years the medical profession of this country has suffered from a phobia. We have been afraid that the Federal Government would upset our business. We are to have a talk tonight on that subject, and I will ask Dr. McKay to introduce the speaker.

Dr. Hamilton W. McKay (Charlotte): Mr. President and Members of the House of Delegates: It is my privilege to present to you tonight a representative of one of the important movements in modern medicine. I am sure most of you know a good deal about this movement. Instead of saying anything about the speaker himself, I am going to ask the representative of the National Physicians Committee for the Extension of Medical Care in his remarks to explain to you in detail as if you knew nothing about this movement.

It is my pleasure to present to you the Executive Administrator of the National Physicians Committee for the Extension of Medical Care, Mr. John M. Pratt of Chicago.

Mr. Pratt: Dr. Allan, Dr. Long, Dr. McKay, Physicians of North Carolina and Friends: I am not going to impose on the time allotted me. I have a half hour to talk about a matter for which I have taken as much as four hours.

I don't know where I will get to before I shall have finished, and I want to tell you now, in the beginning, why I am here. I have nothing to sell to you people. This is your problem. Unless you physicians come to understand exactly what this situation is and do something about it, there are going to be radical changes which will revolutionize the pattern of American medical practice and service.

On the 23rd day of April I had the privilege of talking for an hour and a half to 250 physicians of the State of Minnesota. In my opinion, my task here, during this thirty-minute interval, is to try to get through to you men an understanding of what this problem is, and then what the physicians can do to become an important factor in the final solution of the problem.

Therefore, instead of talking to you, I am going to quote from some four or five men of your profession statements which they have made during the last six weeks. I have here the original manuscript used by Dr. Van Etten, the President-Elect of the American Medical Association, before the Minnesota House of Delegates three weeks ago. In part he said, "As a direct result of ninety-four years of hard work, medical education and medical service in America is the best in the world. Health statistics are unsurpassed and constantly improving. In spite of this undisputed record, there are political theorists and imitative philosophers who would substitute a European system of health administration for this American evolution, which has such rich vitality and promises of still greater attainments in devoted service to the American people."

At that same meeting, Dr. Adams, the President of the Minnesota State Medical Society, said: "We are facing a challenge, vigorously relentlessly. Those who would substitute a system of government control of medical service are tirelessly at work."

At that meeting Dr. Hennessy, the President of the Iowa State Medical Society, was present. He said: "We have failed. We as physicians have failed to take the public into our confidence. If we will merely tell the public of the novelties of medical progress, they will come to understand that those of the profession are actually public benefactors."

Dr. Danvers, President of the North Dakota State Medical Society, said in his presidential address: "The weak spot in American medicine is in its singleness of purpose. Its greatest danger lies in the exclusiveness of its devotion to scientific improvement and technical effectiveness. There is a new factor with which we must contend. Propaganda coming into widespread use has adversely affected the status of the physician, and altered the viewpoint and the attitude of the patient. The degree of independence, the relative place and the quality of service of American medicine for the future will be determined by the intelligence and the vigor with which the physician faces and deals with this new problem."

Dr. Arveson, the President of the Wisconsin Society, was present at the Minnesota meeting and he said: "Unfortunately, we find medicine standing upon the doorstep with its hat in its hand, begging the pardon of the patron. Be that as it may, medicine realizes today that for the last twenty-five years the trend in political thinking and legislation affecting medicine, medical practice and health has been against us. Most of us will agree that it has taken a long time to realize it and a long time to realize that it is an insult. In a way we are to blame for this plight because we failed long ago to go out and inform the public as to our position in the controversy. The answer to our prayers seems to be here in the National Physicians Committee for the Extension of Medical Service."

I want to quote now from the last issue of Nation's Business. Nation's Business, as you men know, is the official organ of the United States Chamber of Commerce. The National Physicians Committee has some reason to be proud of the fact that in a way it was instrumental in securing this cooperation in the fighting of this battle. Of this so-called national health problem, Nation's Business, in its last issue, says, in part: "The threat of the National Health Program still hangs as a shadow on the land far more sinister than that in Surgeon General Parran's book of the same title. Only two things have barred its enactment: One is the terrific cost. The other delaying factor is the recalcitrant private practitioners who constitute most of the medical profession.

"If they continue to stand steadfast they can certainly defeat it. Behind the program are issues much bigger than the more concrete questions we have been discussing here. One is the issue of whether a scientific question is to be decided by listening to those professional men who are learned in that science, or by an appeal to the emotion and cupidity of the mob. We are told that this is the method of democracy.

"Social frauds, like compulsory health insurance, are insinuated under honeyed words about relieving the suffering of the helpless, poverty-stricken people. But an examination of the Wagner Health Bill reveals that the language does not limit its benefits to the indigent or medically needy. It is drawn to apply to every person, whether needy or not. This is deliberate. It anticipates the establishment of universal state medical service for everybody. That is socialism as unadulterated as if it came from the sanctified pen of Karl Marx himself.

"The Health Program is part of the broad effort to sell Americans a planned economy. It is not essentially different from that conceived by Lenin and Stalin in the Russian Five Year Plans. The Parran-Roche-Wagner scheme is more far-seeing: it is to run ten years. The authors have tackled the 'god-like bookkeeping of human destiny that balances results against costs.' If they can show a string of hospitals and rows of well selected survey statistics, they will count the cost in debt and lost liberties of free men as pebbles in the balances."

I have to ask you men tonight to take for granted the part of this problem which it would take an hour, actually, to talk about. The facts in the case are that back in 1938 your representatives of the American Medical Association were hailed before a Federal Grand Jury. Simultaneously with that action, an interdepartmental committee in Washington was making a report on public health conditions in the United States.

By December of 1938, on the representations of agents of the Department of Justice, indictments were voted against Dr. Fishbein, Dr. West, and seventeen other officials of the American Medical Association and the Dallas County Medical Association of Texas.

To you men sitting here tonight these indictments are probably so far away that they may be of less importance to you than the invasions of the lowlands in Holland and Belgium, but these men—and keep this in mind—Morris Fishbein, the editor of the **Journal of the American Medical Association**, Olin West, the Secretary and General Manager of the American Medical Association, and seventeen others of the A. M. A., are under criminal indictment, the same kind of indictments that applied to Al Capone and Moe Annenberg.

These men are under criminal indictment, and if the case is won, two things will happen. First, you men will find that instead of being members of a great profession you are merely representatives of a business trade or league. Second, these men will have to serve penitentiary sentences, and there will be substantial fines.

This may not mean anything to you, but if this case is won your State Medical Association will be involved to identically the same extent as your national Association, and one by one the State Associations and the County medical units will undoubtedly merely dissolve before this onslaught. That is one phase of this problem.

This National Physicians Committee for the Extension of Medical Service is a strictly non-partisan and non-political institution, and it is non-political for the most obvious of reasons. The facts in the case are that over a period of eighteen months independent physicians meeting in groups like this in Detroit, San Francisco, St. Paul, Minneapolis, St. Louis, Kansas City, Des Moines, Pittsburgh, Philadelphia, Baltimore, Boston, and larger cities throughout the United States, created a public opinion which for the time being pigeonholed the National Health Bill. But, after the indictments of these physicians in December of 1938, your national institution was absolutely stymied. There was nothing it could do. It was faced not only with these criminal indictments. As soon as the agents of the Department of Justice made their case on the fact that the American Medical Association was a business league and not a scientific, educational foundation, agents of the Department of Internal Revenue went to Chicago and for months checked every penny of expenditure not only of the Association but of its officials. If that case is won, the chances are that your institution in Chicago, your national institution, will be faced with an income tax which may total as much as a half million dollars over a period of the last ten years.

By virtue of that condition, the American Medical Association was behind the eight ball. There was nothing it could do. But independent physicians began holding meetings. In the State of Michigan they held 157. In the State of Pennsylvania, they held over 700. According to the records that are now available, a total of more than 6000 meetings were held from December of 1938 to July of 1939, and those independent physicians were responsible for clarifying an issue and congealing an opinion which, for the time being only, has pigeonholed the Wagner National Health Bill.

The men who were responsible for the holding up of the passage of that legislation were not Republicans but Democrats in the Congress of the United States. Naturally, the Republicans were opposed. There is no chance of this bill's being before this Congress, and there is no chance of its becoming a vital issue in the approaching Presidential campaign because these independent physicians gave evidence of an aroused public opinion which no administration wants to face at this time.

This is temporary, however, and next year, be the Congress Democrat or Republican, this matter of health is going to be dealt with by national legislation.

This is my 315th conference with physicians during the last two years. You can't meet that many physicians over that length of time without getting some idea as to what they are thinking. Last fall, in September, after the Wagner National Health Bill was pigeonholed, the leaders of your profession knew two things: first, that by virtue of a fundamental change in economic conditions in this country, American medical service, as it was organized, and as it had been distributed over a period of fifty years, was not quite adequate to meet a new need, due not to any medical default but due only to a fundamental change in economic status. And, on the other hand, there was the glaring fact that when this problem was approached with the idea that there would be revolutionary changes in the type of medical service and medical practice, politicians knew that it would be essential, if those changes were to be made, to break down the confidence of the public in American medical service and discredit to a certain degree the practicing physician.

This applies differently in different areas. But the facts in the case are that beginning with that suit against the American Medical Association, which was instituted more for the propaganda value of the litigation than for the winning of the suit, continuously in newspapers, magazines, radio, every medium of contacting the public has been used to discredit the American medical profession, for the purpose of paving the way for radical changes in the pattern of American medical practice.

You doctors have gone on and on until, without any doubt, you have provided the most effective medical service and the most widely distributed medical service in the world. Since 1900, the death rate has been reduced from 1755 to 1060 per hundred thousand of population. There is no institution, no group of men with an achievement so dramatic and of such vital importance to the United States, but none of your public knows those facts.

The only way on earth that there is to be any protection for the medical profession—far more than that, any protection for the public—is for those vital facts, those all-important statistics of the accomplishment of medicine, to be carried through, not to your Senators and Congressmen, but to the rank and file of the voters, the men who form public opinion, who put those men in office.

There is no one in this country to do this job but the physicians. They have made a start. They set up the National Physicians Committee for the Extension of Medical Service, to do two things: First, the physicians were conscious of the fact that under the new economic conditions prevailing steps had to be taken to provide adequate medical care for the needy and the indigent, on the one hand; second, that it was essential, if the integrity and the effectiveness of this profession was to be protected and preserved, that the public be made conscious of these all-important facts.

The National Physicians Committee came into being quickly. It had to have a start. There were two men, Roger Lee of Boston and Ben Wright of Minneapolis. Fifteen were added to those two. Those men invited men from every state to form a central committee, and every state now is represented on that central committee with from three to twenty men, with the idea that as these state units develop representation and elect officers, they would become the governing body of a nationwide institution which would take upon itself the responsibility of selling to the American public the achievements of American medicine.

I don't know whether you men think this is important or not, but I can tell you this, without any qualification whatsoever: The leaders of your national institution believe that unless this task is undertaken and thoroughly done, you will have revolutionary changes in your form and system of medical practice.

Beginning last November, this idea and understanding of this purpose began to dawn on a few people, some in California, some in Arizona, some in Montana, some up in Connecticut, some up in Maine, some in Carolina. They began putting money into a pot, and I assure you that no one has given anything that hurt. I think there are about 100 doctors who gave $100. There are possibly 200 who gave $50. There are 7000 now who have put at our disposal $67,000, and for the first time in the history of American medicine, the physicians are facing this thing.

How many of you men have seen this? (Indicating pamphlet) You all have received it. If you haven't seen it it is because you didn't open your mail. A week ago 156,000 copies of this were mailed in this kind of an envelope, which says, "Handle With Care".

There is the prospect of putting 25,000 of these, framed, in the waiting rooms of physicians. We have the prospect of putting 50,000 framed copies of these in drug store display places. This advertisement, a two-page advertisement, will appear in the June 22 issue of the Saturday Evening Post. It costs $23,000, but it will reach 3,500,000 people. We will send out between two and five million copies of the brochure, "Priceless Heritage," which is the theme of the physicians' new approach to selling the public on the all-important achievements of American medicine.

Listen, men! In California, Oregon, Washington, Maine, Michigan, Illinois, and Georgia, in every state of this Union, physicians are beginning to get an understanding of what we are trying to get at, and it is a simple thing: selling the American public on the achievements of American medicine. To do the job thoroughly is going to demand the cooperation of every practicing physician in the United States. I am here tonight merely as a representative to explain casually a part of this problem. To you we throw the torch. It is your problem.

President Allan: Mr. Pratt, you have done us a great pleasure to come down and talk to us on this subject.

Next on the program is the report of the Committee Advisory to the Industrial Commission. The Chairman is Dr. Suiter. He will present the annual report.

Dr. W. G. Suiter:

Report of Advisory Committee To Industrial Commission

The Advisory Committee met with the Industrial Commission once every four months during the past year, with a full attendance at each meeting. One hundred and twenty-one cases referred to us were fully reviewed. In twenty-eight of these cases the fees were either raised or restored to the original fees.

In 1939 there were submitted to the Commission 58,565 medical, nursing, hospital and dental bills. 8,570 or 14 per cent of these were reduced by the commission. 49,995 or 86 per cent were paid in full as submitted. From these figures it would seem that the large majority of our physicians were satisfied with their fees.

The total sum of all medical bills submitted was $736,043.04. Of this amount $661,605.39 was paid, making a reduction of $74,437.65. This gave an average reduction per bill of $1.27, or an average reduction per reduced bill of $8.66.

During our term of office several letters from medical groups and individual physicians critical of the Industrial Commission for reducing fees have been received by our State Society Secretary and referred to us; also numerous letters, many bitter in tone, addressed to Dr. Horton have been read by us in our review of cases. Judging from these letters, and also from our conversation with physicians, we are of the opinion that many physicians in the state are not at all acquainted with the present fee and review system, and many others do not fully appreciate the problems involved in this difficult work. For these reasons we have incorporated in this report a discussion of these problems as we, from our experience, view them.

We shall first discuss the basis on which the fees were reduced and then the necessity for keeping the total medical cost of industrial cases within a certain limit.

Now on what basis were these fees reduced? Entirely on the fee schedule and the rules of the schedule. In flat rate cases some reductions were made because it was obvious that the bills were entirely out of line with the fee schedule. Some doctors seemed never to have consulted the fee schedule nor to have taken into consideration the financial and social status of the employees. Occasionally physicians because of their expertness or renown seemed to think that they should be allowed larger fees. Others felt that their cases required unusual attention and expense and submitted bills larger than the flat rate fees. Such cases were given careful consideration by the committee and sometimes extra fees were allowed, but we also had to take into consideration the contention of the Commission that the same physicians have industrial cases requiring less work and expense than the average and that over a period of time one counterbalances the other. We found many physicians making the error of figuring their fees on a per visit basis in cases that according to the schedule should have come under flat rate fees. Occasionally we found two physicians treating the same patient over the same time-period, and each presenting a bill.

Other similar causes were occasionally found to account for reduction in fees, but the causes that stirred up your indignation and perplexed our committee most were the reductions due to "high treatment frequency" and the fees for these treatments. In many cases apparently treatments were too frequent, particularly in view of the good results obtained by those who practice infrequent treatments and give nature more chance to do her work. For instance, in the treatment of chronic leg ulcers, one group of doctors would report dressings daily or every other day over a period of weeks and months. Another group getting equally good results would report treatments every five to seven days. Our attention was called to cases showing treatments daily except Sundays. The Commission contended that if Sunday could be skipped consistently, why not other days, too. In dealing with these cases we had to bear in mind constantly section 26 of the Industrial law and rule 7 of the Fee Schedule, which were frequently not taken into consideration in the bills presented. Section 26 reads: "The pecuniary liability of an employee for medical, surgical, hospital services and other treatment required, when ordered by the Commission, shall be limited to such charges as prevail in the same community for similar treatment of injured persons of a like standard of living when such treatment is paid for by the injured persons." Standard of living includes marital status, number of dependents, and patient's weekly wage. Rule 7 reads: "In cases where no flat rate for full treatment has been provided charges for daily dressings or visits will not be allowed unless the necessity for them is fully shown. In such cases and when reports show a high treatment frequency or protracted treatment, the Commission will reduce the per visit charge so as to bring the total cost within a reasonable flat-rate for full treatment." In most of the cases we reviewed, the average income of the patiet was given as twelve to eighteen dollars per week. In this low income group in private work we believe that it is customary for the physician to charge according to the principle outlined in rule 7. It has been the policy of our committee, however, to contend for payment of all treatments except where high treatment frequency was obvious. We have not been very successful, however, in our effort to increase the fee per treatment above a dollar. Here we have had to settle in the spirit of compromise, realizing the necessity for keeping the total medical costs within reasonable limits.

Now this is what we mean by keeping the total medical costs within reasonable limits. We work on the assumption that you believe the State Industrial Commission as now organized is beneficial to the medical profession. We believe all physicians agree that under this system the vast majority of us receive each year a larger income for our industrial work than we received under the old system of optional insurance and law-suits. We feel that our profession wishes to safeguard this institution, even though we may not fully agree with all of its rulings; therefore we believe it our duty to cooperate with the Commission to guarantee its existence. Now this cooperation must find practical application in holding to a reasonable limit the total medical cost of industrial cases. With a given insurance rate there must be a limit to the sum that is spent for medical care, loss of time of employees, disability and death claims and the expense of operating the Commission. To go beyond this limit for any prolonged time would necessitate an increase in the insurance rate. At this point we would antagonize the all-powerful employer group, which already feels that the insurance rate is high. Whether this is true, or whether the Insurance Companies are reaping too large a reward, we are not prepared to say. That phase of this problem is beyond the scope of our committee. Our present problem is to cooperate with the Committee under its present set-up. Based on the present insurance rate it has been the experience of State Industrial Commissions over the country that a safe limit for the total medical cost is 33 per cent of the total costs of industrial cases. In other words, it is explained in terms of the so called "Compensation Dollar". Out of this compensation dollar must be paid all of the items enumerated. In order to pay the other items the medical cost should be held to thirty-three cents of each compensation dollar. It happens that the medical cost in this state has been on the increase for the past two years and is now 36.2 cents or 3.2 above the average cost for the United States according to available statistics. It seems from these figures that the physicians in our state are receiving a larger industrial income than in most of the states. This being true, our committee felt that it must cooperate with the Commission to prevent further increase in medical cost until such a time as something is done to increase the income for industrial work. We cannot reduce the total medical cost without strict adherence to the fee schedule.

What I have had to say will give you some idea of our problem and the things we have had to take into consideration, and I hope will cause you to appreciate the position of the next Advisory Committee whenever you happen to receive a reduced bill that has been reviewed by that committee. I am sure that our committee has made many mistakes, and that in many instances your treatments have been costly and your fees inadequate. It has been just as obnoxious to us to sanction the reductions, except where they were definitely out of line with the schedule, as it has been for you to have your bills reduced. Your interests have been foremost in our minds at all times. I can say without reservation that the Medical Committee has been impartial. We have raised no fee because of personal friendship and we have sanctioned no reduction because of prejudice.

The Commission also admits that apparent injustices have been done in particular cases by the necessary policy of reducing all bills to a reasonable flat rate basis, but it contends that physicians treat many industrial cases that require little time and attention from which they derive a larger income than would be derived from a similar group of low-income cases in private practice. This they claim more than compensates for any reductions made in protracted cases. I would like for each of you to test this contention by your records and experience. The fee-schedule with the review system has been in operation for four years. Review your industrial cases over that period of time and compare your industrial income with your private income from a similar wage group. If it is found among physicians generally that our industrial income does not compare favorably, then we shall have very just cause for complaint, and incontestable argument on which to base our demands for larger fees.

The total additional income obtained by the committee's review of referred cases has been small. Based on that effort alone I would say that the results are not commensurate with the time and effort expended by us. Based however on our contact and friendly discussions with the Commission at these sessions together, I believe that the committee is of inestimable value to our profession. The committee is able from this contact and its experiences with the Commission, to interpret to you the problems of the Commission in their relationship to the profession, and to present to the Commission in a frank and impressive way the complaints and difficulties of the profession in this industrial work. This year the Medical Advisory Committee has succeeded in obtaining allowance of fees for anesthetics in deep finger and hand drainage cases. In other similar ways we have made some progress.

In closing I must speak a good word for the Medical Director of the Commission, Dr. Horton, who has been bitterly assailed at times. Our relationship with him has been pleasant. We have found him capable and just, and as reasonable in his view point as any physician could be in his difficult position. I believe most, if not all of the members who have previously served on the Advisory Committee, are of the same opinion. There is a tendency for any man in his position, where it is necessary to hold total costs within a specified limit, to take advantage of every opportunity to reduce the costs to that limit. If just complaints are not reported, however, this tendency may exceed its bounds on the theory that the profession is more than satisfied. Your committee serves a useful purpose here.

Respectfully submitted by
W. G. SUITER, Chairman.

President Allan: The report will be published. You have heard Dr. Suiter's report. What is your desire?

. . . It was moved and seconded that the report be accepted . . . The motion was carried.

President Allan: Next is the report of the Advisory Committee on Maternity and Infancy for the Children's Bureau. Dr. Davison, have you got a report to make? Is there anybody else on that Committee present? If not we will go to the next Committee.

Secretary-Treasurer Long: Next, Mr. President, is the report of the Committee Advisory to the Woman's Auxiliary.

President Allan: Dr. S. D. Craig. Is Dr. Craig present? Is there any member of that Committee present? If not, we will go to the next report.

Secretary-Treasurer Long: The Committee on Cancer.

Dr. Henry B. Ivey:

Report of the Cancer Committee

The activities of the Committee this year have been varied somewhat from the usual. We are pleased to report an unusual interest in cancer control. The attitude of the whole profession has been one of activity and cooperation. Every physician called upon by your Committee to take part in the campaign has responded readily and with enthusiasm.

In May, 1939, it was decided to have an educational clinic at the Wake Forest Medical School as had been done in previous years. This Clinic was held on May 29. The speakers were Dr. J. Shelton Horseley of Richmond, Va., and Dr. Wright Clarkson of Petersburg, Va. These speakers delivered most interesting and instructive lectures on the diagnosis and treatment of cancer. This meeting came during the commencement and all of the alumni were especially invited and all physicians welcomed. The attendance was good.

At a meeting last fall, your Committee decided that one big clinic once a year was not far-reaching enough as a post-graduate or refresher course. We felt to hold a meeting at a single location was not fair to so many men who might be busy at the time or too far away to attend, so other plans were considered. It was decided to ask each District Society in the State to have one meeting during the year devoted entirely to the study and discussion of cancer. Each Society was asked to put on a Symposium by its own members or by invited speakers of its own selection. This proposal came a little late for some of the Societies but five of the districts did have these meetings. The Tenth held a meeting at Marion with a large attendance, the Ninth at Statesville, the Eighth at Greensboro, the Second at Washington and the Fourth at Wilson. We wish it were possible to incorporate the programs that were rendered at these meetings. They would be a credit to any society either local or national.

In considering the best approach to lay education the committee decided that it would be well to devote more time to the young people in the colleges and high schools. These young people are eager for any information pertaining to health and when they obtain this knowledge they take it to the homes and impress it on all the other members of the family. Dr. F. E. Davis of Greensboro showed cancer films and lectured to the student body of North Carolina Woman's College. Dr. C. C. Carpenter did the same at Wake Forest, Salem and Meredith Colleges. In some of the counties campaigns were put on in the high schools by civic organizations. Doctors were invited to lecture in the high schools and cancer literature was distributed to the students. A prize was offered for the best essay submitted by a student. In one county 400 essays were entered. It gives us great satisfaction when we think of the number of future parents and heads of future families that were reached in this process.

The Field Army is doing a great work among the adults, and your Committee was called upon to speak to numerous lay gatherings in different parts of the State. It was thought advisable to arrange a Speakers Bureau including physicians in all the localities of the State. These men were asked to respond to the calls of the army to speak to lay meetings, and they responded in a very gratifying manner.

The Committee would like to make two suggestions to the new committee:

1. That educational programs in the schools and colleges be continued and enlarged to include all senior high school students and all the colleges in the state.

2. To encourage all District Societies to have at least one meeting each year devoted to cancer, thereby calling the attention of practically every physician in North Carolina to this disease.

Respectfully submitted,
H. B. Ivey, Chairman
T. Leslie Lee
C. C. Carpenter.

North Carolina Cancer Committee Financial Report—1939-1940

On Hand		$200.00
June 30, 1939 Dr. C. C. Carpenter, For Clinic at Wake Forest Medical School	$100.00	
October 12, 1939 To Dr. Julian A. Moore Expense of Dr. Pendergraph at Asheville Meeting	35.00	
May 11, 1940 Dr. H. B. Ivey Stationery and Stamps	12.00	
May 11, 1940 Margaret Kornegay Secretarial Work	15.00	
	$162.00	$162.00
Balance on Hand		$ 38.00

President Allan: Gentlemen, you have heard the report of the very excellent work which the Cancer Committee has done. What will you do with it?

Dr. P. M. King (Mecklenburg): I move it be accepted.

. . . The motion was duly seconded and carried.

President Allan: The next Committee to report is the Committee on Commercializing Drugs, Dr. Northington.

Dr. James M. Northington: This is a continuing Committee from last year's meeting. This Committee was appointed two years ago with the idea of seeing what could be done with regard to reducing the advertising of dangerous drugs through the public press and the radio.

I called at two radio stations in the city of Charlotte and learned from one of them that the Columbia network has for some time declined to accept any advertising of this kind, which they had been convinced by representations from medical bodies was dangerous, and that they had discontinued advertising any form of laxative, not because it was dangerous but because it was objectionable esthetically. The other station gave no such assurance. Both were very approachable and stated that an expression from this Society would be given ample consideration.

Speaking as well as I can for the Committee, I wish to renew a recommendation which I have made many times, that this Society transfer to the State Board of Health, the elected and paid custodians of our health, the duty of protecting the public health in every way possible, by influencing the Legislature to prohibit the advertising of drugs which are far from being innocent, and by prosecuting the quacks who practice in perhaps every county of the state. Anything which we, as practicing physicians, undertake to do is probably set at naught by their statement that the State Board of Health, or the County Board of Health, or the County Health Officer, or the City Health Officer, has taken no action. When the State and local Boards of Health were established, we were disarmed, as practicing physicians, in prosecuting these people.

I would like to recommend, Mr. President, that this Society do all it can to transfer the duty of prosecuting quacks and of prohibiting the dangerous advertising of drugs and other curative remedies from the State Board of Medical Examiners to the State, County and City Boards of Health.

President Allan: You have heard Dr. Northington's report. What do you wish to do with it?

. . . It was moved and duly seconded that the report be accepted . . . The motion was carried.

President Allan: I have skipped over the report of the Executive Committee. I reviewed one meeting which the Executive Committee had, and with your permission, the minutes of that meeting will be published either in the **Journal** or the **Transactions**.

Minutes of the Executive Committee

Medical Society of the State of North Carolina
Thacker's Restaurant, Charlotte
September 6, 1939

The meeting of the Executive Committee held at Thacker's Restaurant, Charlotte, Wednesday, September 6, 1939, was called to order by President William Allan.

The following were present:

President, William Allan.
First Vice President, F. Webb Griffith.
Second Vice President, Frank C. Smith.
Secretary-Treasurer, T. W. M. Long.

Councillors:

First District, H. D. Walker.
Second District, Paul F. Whitaker.
Fourth District, G. W. Mitchell.
Fifth District, J. G. Pate.
Sixth District, Geo. L. Carrington.
Seventh District, B. H. Kendall.
Eighth District, R. C. Mitchell.
Ninth District, J. R. Terry.
Tenth District, Julian A. Moore.

From the Editorial Board:

P. P. McCain, Chairman.
Wingate M. Johnson, Editor-in-Chief.
W. R. Berryhill.
C. C. Carpenter.
Paul H. Ringer.
Hubert A. Royster.

The President stated the object of the meeting to be the matter of the publication of the Journal and the letting of the contract for its publication. The President then asked for the report of the Editorial Board.

Dr. P. P. McCain, making the report for the Editorial Board, stated that the board had met and formally organized and that: (1) The following officers had been elected: P. P. McCain, Chairman; Wingate M. Johnson, Editor-in-Chief; T. W. M. Long, Business Manager; (2) the Journal was to be known as the **North Carolina Medical Journal**; (3) the sum of $1200.00 per annum was to be paid the Editor-in-Chief as salary in addition to $300.00 per annum for office expenses; and (4) the Board recommended the letting of the contract for the publication of the Journal to Edwards and Broughton Company of Raleigh, who had agreed to publish the Journal according to specifications similar to those of the **Illinois Medical Journal** for $288.00 per issue, less certain incidentals such as preparation of the mailing list, postal charges, etc.

Dr. H. A. Royster, who had acted as Chairman of the sub-committee to get bids for the publication of the Journal, explained the various bids in detail and the reason of the award to Edwards and Broughton.

Dr. G. W. Mitchell stated that it was the wish of the last House of Delegates that all things being equal, and if Dr. James M. Northington cared to bid, the award should be made to him.

Dr. R. C. Mitchell, seconded by Dr. G. W. Mitchell, moved that the Secretary forward specifications of the contract for publication of the Journal to Dr. Northington with the request that he present a bid within ten days, said bid to be returned to the Secretary, who in turn was to send it with the two lowest bids to the members of the Executive Committee. Each member was then to notify the Secretary in writing as to his choice. The Secretary was instructed to forward this vote to the Editorial Board, which was then to make the award to one of the three lowest bidders. The motion was unanimously carried.

Dr. Julian Moore, seconded by Dr. G. L. Carrington, moved that all the actions of the Editorial Board, except the letting of the contract to Edwards and Broughton Company, stand approved. This was unanimously carried.

Dr. Paul F. Whitaker then moved that an amount, not to exceed $300.00, be appropriated from the funds of the Medical Society for expenses of members of the Editorial Board, other than the Editor-in-Chief, in attendance upon the various meetings of the Editorial Board. This motion was carried.

Dr. Carrington, seconded by Dr. Whitaker, moved that the Secretary-Treasurer be instructed to use the differential amount between the estimated cost of printing the **Transactions** and the actual cost of the abbreviated **Transactions** toward the defraying of the cost of publication of the Journal. This was carried.

Dr. G. W. Mitchell, seconded by Dr. Whitaker, moved that the Secretary-Treasurer be instructed to pay from the unused balance of the Committee on Legislation the expenses incurred by Dr. F. Webb Griffith's Committee on Socialized Medicine. This was carried.

There being no further business, the meeting adjourned.

According to the instructions of the Executive Committee acting in an advisory capacity to the Editorial Board, Dr. Northington was contacted, his bid received, and duly forwarded to the members of the Executive Committee with the two lowest bids. The results, October 6, 1939, were as follows: Bynum Printing Company 6, James B. Northington 6, and Edwards and Broughton 3.

There being no majority, President William Allan called for a second ballot by mail. The results were as follows, October 15, 1939: Bynum Printing Company 8, James M. Northington 4, and 3 votes unreported.

The foregoing facts were laid before the meeting of the Editorial Board in Raleigh, October 15, 1939. All bids were carefully reconsidered and two new bids were received. The Editorial Board found the bid submitted by the Penry-Aitchison Printing Company of Winston-Salem to be lowest, and after considerable debate voted unanimously to ask the Executive Committee to reconsider for the following reasons:

1. Economy in cost of printing.
2. Economy in administration.
3. Convenience to the Editor-in-Chief.

When the foregoing was presented to President William Allan he gave his approval as President of the State Society and instructed your Secretary to advise the Executive Committee accordingly and to ask that its members reply in writing to the Secretary expressing their approval or disapproval. The ballot resulted as follows: Penry-Aitchison Printing Company 14, Bynum Printing Company 1. Whereupon the Penry-Aitchison Printing Company of Winston-Salem was let the contract for the printing of the **North Carolina Medical Journal**.

On January 29, 1940, the Postmaster at Winston-Salem notified the Editor-in-Chief, Dr. Wingate M. Johnson, that the **North Carolina Medical Journal** could not be entered as second class mail under the Act of August 24, 1912, embodied in section 521,

P. L. and R. until the adoption by the State Society of the following resolution

> "Resolved, That a copy of each issue of the 'North Carolina Medical Journal' shall be sent to each member of each component society under the jurisdiction of the State Society and that each member shall pay of his annual dues of $8.00 $2.00 for a year's subscription to the 'North Carolina Medical Journal'."

This resolution in effect had already been passed by both the House of Delegates and the Executive Committee. However no special amount of the annual dues had ever been set aside as a subsidy for the Journal. On being acquainted with the foregoing facts, President William Allan instructed your Secretary to lay the matter before each member of the Executive Committee and ask that they vote by signed ballot on the question of the resolution and that they forward same to the Secretary. Whereupon the Executive Committee was sent copies of the resolution of which 14 were returned favorably signed.

President Allan: The next report is from the Editorial Board. I think Dr. McCain is the head of the Editorial Board.

Dr. P. P. McCain: At a meeting in June, the Editorial Board unanimously elected Dr. Wingate M. Johnson, Editor; Dr. Paul H. Ringer, Secretary; Dr. P. P. McCain, Chairman; and Dr. T. W. M. Long, Business Manager.

It was further decided to publish the first issue of the **North Carolina Medical Journal** in January, 1940.

At a subsequent meeting, in conjunction with the Executive Committee of the Medical Society of the State of North Carolina, the Executive Committee unanimously approved the above action of the Board.

The Executive Committee also authorized that the contract for printing the Journal be awarded to the Penry-Aitchison Printing Company of Winston-Salem, the lowest bidders.

It is the recommendation of the Board that the historical data, the minutes of the House of Delegates and of the Executive Committee in abstract, and the roster of the members, be published in a single issue of the Journal.

Respectfully submitted,

Wingate M. Johnson
Paul H. Ringer
Fred M. Hanes
Reece Berryhill
H. A. Royster
C. C. Carpenter
P. P. McCain.

President Allan: You have heard the report of the Editorial Board.

. . . It was moved and duly seconded that the report be accepted.

President Allan: Is there any discussion? That, as I understand it, abolishes once and for all our Transactions. All in favor of that say "Aye"; opposed, "No." The motion is carried.

The next report is from the Finance Committee.

Secretary-Treasurer Long: Dr. Coppridge is here. Dr. Peery, Chairman of the Committee, is sick and not able to be here. Dr. Coppridge will make the report as a member of the Committee.

Dr. W. M. Coppridge:

Report of the Finance Committee

The Finance Committee has examined the auditor's report which was made by George R. Poole, Certified Public Accountant. This report will be published and made available to each member, or other interested parties. The financial condition of the Society is good—in fact, stronger than at any time since the depression of the twenties.

We recommend that the Secretary-Treasurer's salary be raised to $2400.00 per year. The unusual demands on this officer, requiring time, effort, and travel are such that the present salary does not adequately compensate him if the responsibilities are faithfully discharged.

We recommend that the usual appropriations of $3500.00 for the Transactions be used as a subsidy for the **North Carolina Medical Journal**, in editing and printing the matter found in the past in the Transactions.

Proposed budget for the North Carolina Medical Society—1940:

Current and back dues	$ 11,400.00	
Money from advertising	4,000.00	
Interest on deposit at 2½%	187.50	
	$ 15,587.50	
Expenditures—all offices except Secretary		
Stationery	$	100.00
Councillors' travel		250.00
Legislative Committee		800.00
Executive Committee		500.00
Other Committees		600.00
President's travel		400.00
State Meeting reporting		600.00
A. M. A. Delegates		200.00
	$	3,450.00
Secretary's Office		
Salary	$	2,400.00
Clerical Assistance		1,200.00
Stationery		100.00
Rent		300.00
Travel		600.00
Auditing		50.00
Miscellaneous emergency		900.00
	$	5,550.00
North Carolina Medical Journal		
Editor's salary	$	1,200.00
Rent		300.00
Printing the Journal		5,000.00
	$	6,500.00
Total	$	15,500.00

Vance P. Peery, Chairman
G. W. Murphy
Wm. M. Coppridge.

President Allan: I would like to say that I, personally, am heartily in favor of reimbursing Dr. Long, our Secretary, a little better for the tremendous amount of time that he spends on this business.

You have heard the report of the Finance Committee. What will you do with it?

Dr. Mitchell: I make a motion that the report of the Finance Committee be accepted and presented to the next House of Delegates meeting for action.

President Allan: To the next House of Delegates?

Dr. Mitchell: Which is Wednesday.

President Allan: The next meeting of this House of Delegates. Is there a second to that motion?

. . . The motion was duly seconded and carried.

President Allan: The next report will be that of the Hospitals Committee. Dr. J. B. Whittington is Chairman.

Dr. J. B. Whittington: This past year has been a most successful year for the hospitals of the state. They really are your workshops, and perhaps you men who are not directly connected with the administration of hospitals do not realize just what they mean to you, but you would have a hard time practicing medicine this day without them.

This past year in North Carolina has seen unusual growth of hospitals—notably in Charlotte, in Winston-Salem, and at Duke University.

Group Hospitalization has added a tremendous load on the hospitals of the state. There are today something like 135,000 people in North Carolina who have group hospitalization insurance. If a man has his hospital bill paid by insurance, he is certainly in better shape to pay his doctor's bills than if he does not have it. Your child, the Hospital Savings Association is doing a wonderful work, and I think you should be proud of it.

President Allan: You have heard Dr. Whittington's report. What do you wish to do with it?

. . . It was moved and duly seconded that the report be received as information and the motion was carried.

President Allan: The next report will be from the Industrial Health Committee, Dr. Easom, Chairman. Is Dr. Easom here? Is there anybody here who is on that Committee? If not, we will go ahead to the Committee on Legislation.

Secretary-Treasurer Long: Dr. Cobb is Chairman, but I don't think they have any report.

President Allan: We have had no legislation this year, thank the Lord, so I guess we don't have a report.

President Allan: The next report is on Mental Hygiene. Dr. J. W. Ashby is Chairman. Is Dr. Ashby here? Is there anybody here to report for that Committee?

Dr. J. W. Vernon: This Committee has functioned in an advisory capacity in medical matters so far as we have been called upon.

President Allan: You have heard Dr. Vernon's report. What will you do with it?

. . . It was moved and duly seconded that the report be accepted. The motion was carried.

The next Committee is the Post-Graduate Medical Study Committee.

Secretary-Treasurer Long: Dr. James W. Vernon of Morganton is Chairman.

Dr. Vernon: Mr. President, your Chairman has requested a member of this Committee to prepare and present to you a report of the activities of your Committee during the past year; he is a member who has shown the greatest activity and interest in this phase of the work—Dr. William H. Smith of Goldsboro.

Dr. William H. Smith: Mr. President, the Committee has not seen fit to initiate any post-graduate work or medical instruction, because this appears to be well taken care of by other agencies. These agencies are the three medical schools in the state and the State Board of Health.

Duke University Medical School, during 1939, offered a symposium on diseases of the lungs and thorax. This symposium lasted for three days, and as usual, the lecturers were eminent medical men. This symposium was well attended.

The Committee wishes to recall to the minds of the members of the profession the fact that the Duke Medical School offers instruction in the hospital without charge. The Duke Medical School offers any physician in the state free instruction in the Medical School. They will help the physician to get room and board, at a very small cost, and there is no charge for the instruction. The only stipulation they make is that they be asked ahead of time so that they can arrange the work for the physician who desires instruction.

The Wake Forest Medical School gave its usual clinic on cancer last year. This clinic was held in cooperation with the Committee on Cancer of the State Medical Society. These clinics have been well instructed and well attended.

The University of North Carolina Medical School, with the cooperation of the Extension Division of the University has put on post-graduate instruction courses in three places in the state—namely, Charlotte, Raleigh and Goldsboro. These courses have been well attended; a total of 395 physicians have been in attendance. The visiting lecturers held clinics in the afternoon. All of the three places have asked that a course be given again next year. Charlotte has had one of these courses each year for the past three years.

The State Board of Health is offering post-graduate instruction to physicians and nurses at its school of Public Health at the University of North Carolina.

The question of adding the deans of our medical schools to the Post-Graduate Committee of the State Society has been discussed among members of the Committee and with the deans of the medical schools. Post-graduate work in North Carolina could probably be better correlated in this way. At present there is no apparent need for this correlation, but the report of the Council on Medical Education and Hospitals of the American Medical Association recommends that all post-graduate work in a state be under the supervision of the State Medical Society.

President Allan: I think our post-graduate study in this state has been excellent—the clinics and the courses given by outside men who come to our state. It is for that reason that you will notice on the program that I haven't invited any more outsiders here at our meeting this year. I preferred to have the opportunity to hear of some of the work our men have been doing, and I have put two of our men in the General Sessions instead of outsiders.

I think it is a great pity that it isn't better known that any of us can spend anywhere from three days to a couple of weeks at Duke and brush up on anything that we want to find out about, or see in general what they are doing. They are very cordial, but they don't want to be in the position of bringing us in there. If you will ask them whether you can come, they will be glad to have you.

You have heard the report. What will you do with it?

. . . It was moved and duly seconded that the report be accepted . . . The motion was carried.

President Allan: The next committee to report is the Committee on Printing.

Secretary-Treasurer Long: Mr. President, as Chairman of that Committee, I wish to say it is all included in the audit and in the report of the Finance Committee.

President Allan: In that case, we don't need any separate report.

The next Committee to report is Public Relations.

Secretary-Treasurer Long: Dr. D. W. Holt of Greensboro is Chairman.

Dr. D. W. Holt: All the members of my Committee met in Raleigh with the Committee on Socialized Medicine one Sunday. Dr. Long, our Secretary, is a member of the Public Relations Committee, and I would like for him, after I have finished, to tell you about our meeting.

The most important thing that has come to this Committee throughout the year is relative to the insurance of low and medium income groups. Right now, a medical service association, which is already functioning in Durham and Orange Counties, as I understand, is trying to insure one of our large industrial plants there now. The management, I understand is in favor of it.

The men in Greensboro, doing work especially in industrial villages, have been asked to cut their fees. As I understand this plan of insurance, it is that the insurance company will pay a stated fee to the surgeon, gynecologist and obstetrician, eye, ear, nose and throat specialist. But this particular company has asked the medical men to cut their fees. These medical men who are doing most of the work in these mill villages are now receiving $2 a visit to the home, and $1 for an office visit. Still, the owners of the mills have asked these medical men to cut their fees, which they don't want to do.

I have been asked, as Chairman of the Public Relations Committee, to report that to the House of Delegates and to get some expression of opinion from this body.

Secretary-Treasurer Long: I did sit on the Committee with Dr. Holt and Dr. McCain, with Dr. Holt as Chairman, when it met in conjunction with Dr. Webb Griffith's Committee in Raleigh and later in Greensboro, at which time the whole matter which Dr. Griffith will very soon bring before you was discussed. We agreed with his report, and anything that I would say here now I think would be premature, as it is all covered by Dr. Webb Griffith in his report.

President Allan: I rather fear that we are steering into the same subject here with three different Committees. I think I will ask for a report on Social Security before asking you to discuss the report of the Public Relations Committee. Is Dr. Houser here? Is there any member of that Committee here? If not, then I would like to call for the report on Socialized Medicine. That is Dr. Griffith's Committee.

Dr. F. Webb Griffith:

Report of Committee on Socialized Medicine

When your Committee on Socialized Medicine was created two years ago, it was assigned three important duties:

1. To start a campaign of education throughout the state to acquaint the physicians and the laity of the dangers of so-called state medicine. Today, I believe that practically every physician in the state is fully aware of the situation.

It is our impression, but of course only an impression, that at least 95 per cent of the physicians of this state (exclusive of health officers and others in public health work) are against any further federal or state control.

Whenever the problem has been properly explained to lay groups, such as civic clubs and other gatherings of intelligent citizens, the response has been overwhelmingly against any further governmental interference.

2. Your committee was charged with the duty of keeping in touch with proposed federal legislation in so far as it affected the doctors and hospitals.

When the Wagner Health Bill was introduced into the Senate two years ago it created a tremendous furor throughout the country. It was so drastic and revolutionary that had it been passed, it would have caused irreparable damage to our profession.

A year ago one of our Congressmen, whose opinion carries tremendous weight in the ways and means of appropriating funds, told your chairman that the country was in no shape to spend from one hundred million up to one billion dollars annually upon a controversial medical problem. If that was true a year ago, it certainly is true today with the changed international situation.

At the suggestion of the President, there has been introduced into the Senate a bill entitled, "The Hospital Construction Act of 1940," which would donate hospitals to those areas where there is obvious need and obvious inability to raise the money locally.

No one could object to the humanitarian aims of such a bill. The objection lies in the fact that the title and the real control remain in the Federal Government, and thus there might be established numerous metastatic foci of bureaucratic government-controlled medicine. It is conceivable that such hospitals might become the entering wedge for further federal encroachment.

Senator Taft pointed out that danger and introduced an amendment giving the title and control to the states or to those subdivisions of the states in which the hospitals are located, after five years of continuous satisfactory maintenance. The bill with the amendment has been reported out of committee.

3. We were instructed to investigate the feasibility and wisdom of establishing a plan for medical insurance along the lines of Hospital Savings.

For two years your committee has given much thought to this subject and has investigated most of the plans which have been tried. There has been a wave of hysteria throughout the country for the medical profession to "do something," regardless of whether that "something" might be good, bad or indifferent.

In his last Rockefeller report, Dr. Fosdick asked the question "How urgent is urgent?", and then went on to say: "If people feel that we must solve the urgent problem of money and credit, or else; we must solve the urgent problem of unemployment, or else; we must meet the challenge of sub-standard housing, or else; we must find the answer to collective bargaining, or else—if all these problems are urgent to the point where they must be answered instanter, then obviously there is no room for the human mind to assert itself. The human intelligence in the field of social activities has no swift or complete answer. It has no perfect solution. If people feel that the urgency is such that it will brook no waiting or compromise, then the only answer must come from the ideologies and the machine guns. They are the same thing. In our panicky depression mood of half a dozen years ago and for some time thereafter, it became a habit to stress the urgency of everything, or else. A favorite statement was 'or else the people will take things into their own hands.'"

Your committee feels that this is one of the most important problems before the Society and that we should proceed slowly and carefully. Our ethics, ideals and personal relationship with our patients are the sacred heritages of hundreds of years and should not be discarded for a mess of pottage or by the threat of the sword of Damocles in the form of federal control.

Your committee believes that some form of cash indemnity insurance is desirable. The public can obtain insurance against automobile accidents, fire, theft and death. It is just as logical to safeguard against the tragedies of prolonged illness or major surgery by insurance providing a cash indemnity.

Your committee has at present no recommendations as to the method of providing such insurance, but recommends that it be given further study.

At present there are several communities trying to solve their own local problems in their own way.

For their efforts your committee commends them. However, at the present time your committee does not give its approval, either expressed or implied, to any of the local plans as proposed or in operation.

North Carolina is a state of such varied interests that a plan which may be satisfactory in one locality may not be suitable elsewhere in the state. Therefore, we recommend that any of these experimental plans, however attractive it may appear, be limited to its own county. We recommend one exception, that a plan introduced into a plant may include subsidiaries located in other counties, provided it has the approval of the Medical Society of the county in which the subsidiary is located.

Every new plan is bound to have unforeseen defects which will need correction. It may be an easy matter to correct these defects in one plant or even in one county, but it might be very difficult, or even impossible if the plan were spread over the state.

Therefore, if any plan, having been thoroughly tested out locally, appears to be applicable to other counties it should first have the approval of the House of Delegates, or at least of the Executive Committee before being tried outside the county of its origin. This question of medical insurance is loaded with dynamite and should be the responsibility of the State Medical Society, except as stated previously where a County Society attempts to solve its own local problems in its own way.

It seems fitting at this time in closing our report that we should recommend the adoption by this Society of the platform of the American Medical Association, and suggest further that every one of us read it again and again and keep it constantly before us as a guiding light in our deliberations on the problems that are confronting us.

President Allan: Gentlemen, you have heard these two reports, which in part have overlapped. What do you wish to do with them?

. . . It was moved and duly seconded that the reports be adopted. . .

President Allan: Is there any discussion of these reports?

Dr. Joseph E. Smith (Bertie): There is only one objection that I have to the insurance companies. I feel that there should be some way of giving the general practitioner some recompense. You men may know more about it than I do, but every insurance company I know of—I am talking about state insurance—only pays the surgeon for a baby case in the hospital. If it is outside of the hospital then the general practitioner doesn't get anything for it. I was wondering if some plan could be worked out whereby the general practitioner could get something out of insurance.

President Allan: Is there any further discussion?

Dr. Philip Davis (Guilford): This hospital insurance matter is, I think, very vital to all of us. I have been studying it quite a bit and have been thinking about the different types of policies. The Hospital Care Association is now offering a policy in which the lower income group does pay the medical man something. It pays him $2 a day up to eight days, I believe, which is $16 for a hospitalization case. That, for me, would be something, because in the average case of this low income group that goes to the hospital, by the time the patient pays his hospital fee, I don't get anything.

I believe Dr. Frazier has a copy of an insurance policy that they have over in Rowan. They find it very successful. I would like to see this Society go on record as favoring some type of insurance. Industrial groups are asking for health insurance and we don't know what to recommend, because we are waiting on some action from the State Society.

I would like to see us take some definite action on this matter tonight.

President Allan: As I understood Dr. Griffith's recommendation, he recommended that the counties work it out for themselves. Is that right, Dr. Griffith?

Dr. Griffith: Yes, sir.

President Allan: So that if Guilford wants to work out a plan for Guilford County and your industries in Guilford County, that fits in with the spirit of your resolution, is that right?

Dr. Griffith: Yes.

President Allan: But apparently it is impossible at the present time to adopt a statewide plan. Is there any further discussion of these reports?

Dr. J. W. Frazier (Rowan): I represent Rowan County. After hearing Dr. Griffith's report, I felt it was not necessary to say anything about our county. We are now in the experimental stage with certain group policies which we feel are working out very well so far. The contract is made with the company as an agent of our County Society. The County Society itself has, at least for all practical purposes, complete say-so in the working of the insurance group, and the insurance is sold as a group proposition in a mill village. We could go into detail on this policy, if the men are interested here, but we will have a much better report later about this type of policy.

President Allan: Is there any further discussion of these reports?

Dr. M. D. Hill (Wake): I would like to know if our Insurance Commissioner can force these companies to pay if they should refuse to. I took up one plan with him once and he said it would not come under his jurisdiction. He didn't want that type of insurance under him. I think if he is afraid of it we should be.

President Allan: Can anybody answer that question?

Apparently you have stumped the whole bunch. We don't know what you are talking about. I don't think anybody can sell insurance in this state unless the Commissioner approves of it. Certainly no commercial company can.

Is there any further discussion?

Secretary-Treasurer Long: Mr. President, I think I might be able to enlighten you on the difference between a commercial company and the Durham-Orange plan. In the case of a commercial company, a guaranteed amount is put in your contract with the holder. This other plan, the Durham-Orange plan, is known as a medical service plan. There the Medical Society underwrites the proposition. In other words, as I recall it, they are going to pay out only five per cent of the money pro-rated among the doctors and the Medical Society. The Society is going to hold 25 per cent of it—there are members from Durham-Orange here and they can correct me if I am wrong on that—and that will go toward administrative purposes. At the end of the year, if there is any left, it will be pro-rated. On the other hand, if it isn't enough, the doctors will just have to cut their bills. That is the information I have. They don't pay 100 per cent. One plan is known as insurance and one is known as medical service. That is the only distinction I know between them.

President Allan: Is there any further discussion? If not, all in favor of accepting these reports as delivered say "Aye"; opposed, "No." They are accepted.

Next is the report from the Committee on Syphilis Control. Is there anybody here on that Committee? If not, the next report will be from the Committee to Study Four-Year Medical School.

Dr. C. F. Strosnider: This Committee feels that the object for which it was appointed is to be accomplished in the near future in that a four-year medical school is to be established. Therefore, I move, Mr. Chairman, that this Committee be discharged.

. . . The motion was duly seconded. . .

President Allan: Is there any discussion? All in favor say "Aye"; opposed, "No." It is carried.

The report of the A.M.A. delegates. Do you wish to have that read, or would you rather have it filed and published? All in favor of just publishing that report will say "Aye"; opposed, "No." It will be published.

Report of Delegate to the American Medical Association

John Q. Myers, M.D.
Charlotte

Mr. President and Gentlemen of
The House of Delegates of
The Medical Society of North Carolina:

I will ask you all to stand a moment in silence in honor of my colleague, Dr. M. L. Stevens, with whom I have had the honor to serve for years.

I want to remind you I have served in the A.M.A. as one of your delegates since 1920—now twenty years—with Royster, Highsmith, Crowell, Johnson, and Stevens. I always have enjoyed doing the work, and I have served in this House of Delegates for more than thirty years, and missed only two meetings since 1904.

During the past year I served on the Rules and Order Committee which put over the platform of the A.M.A. In St. Louis, the Association was so unanimous in its firm stand for organized medicine that a great number of volunteers formed the National Physicians' Committee for the Extension of Medical Service with John M. Pratt as Executive Administrator. The platform which was adopted follows:

The Platform of the American Medical Association

The American Medical Association advocates:

1. The establishment of an agency of the federal government under which shall be coordinated and administered all medical and health functions of the federal government exclusive of those of the Army and Navy.
2. The allotment of such funds as the Congress may make available to any state in actual need, for the prevention of disease, the promotion of health and the care of the sick on proof of such need.
3. The principle that the care of the public health and the provision of medical service to the sick is primarily a local responsibility.
4. The development of a mechanism for meeting the needs of expansion of preventive medical services with local determination of needs and local control of administration.
5. The extension of medical care for the indigent and the medically indigent with local determination of needs and local control of administration.
6. In the extension of medical services to all the people, the utmost utilization of qualified medical and hospital facilities already established.
7. The continued development of the private practice of medicine, subject to such changes as may be necessary to maintain the quality of medical services and to increase their availability.
8. Expansion of public health and medical services consistent with the American system of democracy.

Secretary-Treasurer Long: Next is the report of the Board of Medical Examiners. Dr. James is the Secretary.

Dr. W. D. James:

Annual Report of the Board of Medical Examiners of North Carolina

The Board of Medical Examiners of the State of North Carolina met June 19-23, 1939, at the Sir Walter Hotel, Raleigh, and issued licenses to eighty-six physicians to practice medicine in the State of North Carolina.

The second meeting of the year was held in the Carolina Hotel, Raleigh, on December 11, 1939, and forty-one physicians were granted licenses to practice medicine in North Carolina.

Signed:
W. D. JAMES,
Secretary.

President Allan: You have heard the report of the Board of Medical Examiners. What is your wish?

. . . It was moved and duly seconded that it be accepted . . . The motion was carried.

President Allan: We will now have the report of the Hospital Saving Association, Dr. Springer.

Dr. Springer:

Report to the Medical Society of the Hospital Saving Association

The Hospital Saving Association is, as you know, sponsored by the Medical Society and the Hospital Association. The charter was authorized and signed and its program approved by a joint committee appointed by the two associations, and its Board of Trustees is elected by the two associations. To this extent the Medical Society is responsible for its conduct. Neither the Medical Society nor the Hospital Association has assumed any financial responsibility. As its President, I am taking this opportunity to report to the Medical Society some matters pertaining to its conduct. A similar report was made to the Hospital Association at its meeting in Winston-Salem in April.

The Hospital Saving Association was organized during the fall of 1935. Little, however, was accomplished during the year beyond laying the ground work, and the year ended with only 276 certificates in force and an income of $93.80. The growth of the Association until now is shown in the following table.

Yr.	*Members**	*Pd. Hosp. Adm.*	*Av. Stay*	*Total Days*	*Hosp. Claims Paid*	*Av. Per Day*
1936	14,395	541	8.23	4,450	$17,886.39	$4.02
1937	36,913	2,318	8.06	18,682	76,844.49	4.11
1938	83,156	8,315	7.77	64,835	267,696.49	4.13
1939	123,48	13,492	7.68	103,557	431,418.16	4.17
1940†	127,839	6,395	8.41	53,778	214,560.00	3.99
Totals		31,091	7.89	245,302	1,008,411.53	4.11

* Members refer to those existing on December 31 of each year.
† Items for 1940 cover only January, February, March, and April.

On May 10 a check was issued for $840.00 payable to the Moore County Hospital for services for the month of April, which completed the first million dollars paid by the Association to the hospitals. I will hazard the prediction that during the current year the Association will pay $500,000.00 in hospital claims, and over 98 per cent will be paid to the hospitals of North Carolina. I have no way of computing what proportion of the total cost of the operation of the hospitals of North Carolina this amount is, but I believe it is a fair proportion. (Obviously 127,000 is a very small percentage of the people of North Carolina who need the service.) Nor have I any data upon which to base an opinion as to how much of the amount that the Association has paid to the hospitals would have been collected directly or otherwise from member patients. There are, however, some significant facts derived from a statistical study of our records.

During 1939 the number of members enrolled in our "cost-plus" plan became a significant proportion of the total membership. By the "cost-plus" plan the Association agreed to administer the program for certain employers who wished to assume the liability for the hospitalization of their employees. In these contracts services are provided not included in our regular contracts (x-ray, etc.), and normal waiting periods are waived. This accounts for the fact that the average patient day cost to the Association reached the high of $4.17. All items in the preceding table included the members of the cost-plus plan.

The following table will show our experience with the cost-plus and regular plans:

	Paid Hosp. Admissions	*Av. Stay*	*Total Days*	*Paid in Hosp. Claims*	*Av. Per Day*
Cost Plus	1,630	8.10	13,208	$ 62,792.70	$4.75
Regular	23,066	7.73	178,316	$731,052.83	$4.10

For the services rendered the cost-plus members, the total charges, according to the bills rendered the Association, were $69,191.15. The charges for services not included in our contract (e. g. private room, x-ray, special drugs) were $5,072.14, or 7.3 per cent of the total. If these charges were collected, as it may be assumed they were, and added to the amount paid by the Association, the total collected would have been $67,864.84, or 98 per cent of the regular charges.

If we apply the same procedure to our regular members, the total charges according to all bills rendered the Association were $1,079,261.08, of which $272,857.11 were not included in our contract. If this amount is added to the amount paid by the Association, the total received from these members would have been $1,003,909.94, or 93 per cent of the regular charges. In other words, the hospitals granted a discount of approximately 7 per cent for servicing a group of people, a large majority of whom are otherwise unable to pay more than a small proportion of the cost. This may not apply to every individual hospital, but is the average over the state.

To what extent the Association has been of service in improving the doctors' collections I have no information. I hope they have been no worse. I am reasonably sure that their work has increased.

Thus far the Association may claim to have accomplished its purpose. The hospitals have been paid an average of 93.3 per cent of their regular charges, and the average patient served by the Association has paid the hospital only about one-fourth of the amount he would otherwise have paid. But there are many people in North Carolina who are in need of the service, who are not members of the Association. The problem is to get them into the Association.

The Problem of Enrolling Miscellaneous Groups

The leaders of the large industries are showing a real interest in providing hospitalization and other items of medical care for their employees. Although in many instances payroll deduction has been refused, in other instances the industry has provided the service as a gift to its employees. I believe that in the course of time a large majority of the industries will have provided hospital service—possibly more—for their employees. The industries, however, include a relatively small proportion of the medically indigent of the state. The Group Payment Plan is fundamentally group insurance. Our experience with large groups has been uniformly more satisfactory than our experience with small groups. Especially have the small miscellaneous groups proven unsatisfactory. The attempt to enroll individuals, which has never been a policy of our Association, has been disastrous in most instances. There is apparently no system of questions and answers that will eliminate undesirable risks or avoid "adverse selection", and obviously a medical examination is impracticable. The only protective provision the Hospital Saving Association has attempted is the declaration on the application form: "I certify that I and my dependents listed below are in sound health and that we have no physical condition requiring hospital service." This has proved almost worthless, as many of you know. The Association has paid thousands of claims for chronic conditions which existed at the time application was made and signed. This may have been necessary in the early period, and may be charged to a promotional or educational expense. Obviously, it is desirable from a social point of view, but questionable, if not disastrous, from a business point of view. Perhaps the only way in which miscellaneous groups can be enrolled is to recognize the risk and adjust the premium rate to cover it. I doubt very much if we can continue to enroll relatively small groups indefinitely at the present rate, and it will remain to be seen if such groups can be sold successfully at higher rates.

Cancellations

Parallel with the problem of enrollment is the problem of cancellations of membership. Since the beginning the total number of regular members enrolled has been 160,454 through December 31, 1939. The cancellations during the same period have been 63,509, or 39.63 per cent. Of those who have cancelled, 5,383, or 8.4 per cent, have received hospital service. There are obviously many factors involved in the problem—the labor turn-over with loss of work, the improvidence of the class of people enrolled, and the like. The people of this state have never budgeted for sickness nor for any thing that may happen to them. Under the emotion of the moment they may enroll, but if nothing is coming in they forget to pay. The process of education in the ways of thrift is long and difficult. With such a higher percentage of cancellations the building up of a large membership is a slow process. There are many and obvious ways that the doctors can help. Please remember that this is essentially an insurance business, and the Association is entitled to a fair chance. If the cards are stacked against it, the Association will not succeed. When your patient should be hospitalized, please don't suggest that she join the Hospital Saving Association. Barring some unforeseen events, the Association will be out of the "red", according to methods of insurance accounting, on June 30.

The Association has been under some pressure to include professional services—particularly surgical—in the benefits. This pressure has come largely from some industrial leaders. In some instances groups have transferred their membership to a commercial company, offering such services. Some others have refused to join the Hospital Saving Association because its contract does not include surgical services. The Association is not in a position at this time to assume financial responsibility for such a program.

I. H. MANNING, President.

President Allan: What is your wish in connection with this report?

. . . It was moved and duly seconded that the report be accepted . . . The motion was carried.

President Allan: Next are the reports of the Councilors.

First District—H. D. Walker—no report.

Second District—Paul F. Whitaker—no report.

Third District—W. Houston Moore—no report.

Fourth District—G. W. Mitchell: I would like to say that the Fourth District is in good shape, with the exception of one county, Northampton, which does not have a medical society. We can't get the doctors together in Northampton County to have a county society, but a majority of them have joined the Halifax County Society. Other than that the Fourth District is in splendid condition.

Fifth District—J. G. Pate—no report.

Sixth District—George L. Carrington—no report.

Seventh District—B. H. Kendall—no report.

Eighth District—R. C. Mitchell: Mr. President and Members of the House of Delegates: The Eighth District Medical Society has held two meetings this year, the first at High Point, November 2, 1939. The program of this meeting was a symposium on diabetes. The guest speaker, Dr. W. Halsey Barker, of Johns Hopkins Hospital, Baltimore, addressed the dinner meeting on "Sulfanilamide, Sulfapyridine and Allied Compounds." The second meeting was held at Greensboro, April 11, 1940. The program of this meeting was a symposium on cancer. The guest speaker, Dr. Shelton Horsley, addressed the dinner meeting on "Cancer of the Stomach." Both of these meetings showed an improvement over the usual programs of miscellaneous subjects. There has been no matter requiring the attention of the councilor for adjustment during this year.

Ninth District—J. R. Terry—no report.

Tenth District—Julian Moore—no report.

President Allan: Is there any new business to come before the House?

If not, a motion to adjourn is in order.

. . . The motion was made and carried that the meeting adjourn. Thereupon at ten forty-five o'clock the meeting adjourned.

WEDNESDAY AFTERNOON SESSION

May 15, 1940

HOUSE OF DELEGATES

The meeting convened at two-forty o'clock, President Allan presiding.

Secretary-Treasurer Long: Mr. President, under unfinished business, there are two resolutions which were passed at the first session, to go over until today, amending the By-Laws.

The first resolution is that part of the report of the Finance Committee recommending that the Secretary-Treasurer's salary be raised from $1,200 to $2,400 a year.

President Allan: Let us take that up right now. Will someone make a motion?

Dr. Davison: I move that we do so.

. . . The motion was duly seconded . . .

President Allan: Is there any discussion of that?

Dr. Haywood: Mr. Chairman, I was on the Legislative Committee last year, and I will say that Dr. Long served this Society beyond any financial value.

President Allan: I think, myself, we would have trouble buying him. (Laughter) All in favor of that say "Aye"; opposed, "No." The motion is carried.

Let us have the other one, Dr. Long.

Secretary-Treasurer Long: The next resolution is that Chapter 4, Section 1 of the By-Laws, the last sentence, be amended to read: "The first session of the House of Delegates shall be held at 2 p. m. the day preceding the meeting of the Society, at which session as much as possible of the business of the House shall be transacted."

President Allan: What is your pleasure with regard to this amendment, gentlemen.

Dr. Wingate Johnson: I move it be accepted.

The motion was carried unanimously.

Secretary-Treasurer Long: Mr. President, before you go on to anything else, I have a telegram here.

President Allan: It will save time if I explain it. "Paramount Pictures are making a reel giving Morton up in New England credit for having discovered anesthesia. We are adopting a resolution that Crawford Long discovered anesthesia." There is a suggestion that we pass the same resolution. If any of you feel that Crawford Long should get the credit for it—and I certainly feel that way—you might give me a resolution suggesting to Paramount Pictures that they are going to miss a bus if they let Morton have the credit for it.

Dr. Davison: I move that we pass a resolution similar to the one that the Mississippi State Association passed.

. . . The motion was duly seconded and carried.

President Allan: We will have the report of the Nominating Committee.

Dr. Cobb: Gentlemen, your Nominating Committee wish to present the following report for your consideration:

President-Elect—Dr. F. Webb Griffith, Asheville
First Vice President—Dr. D. W. Holt, Greensboro
Second Vice President—Dr. T. C. Kerns, Durham
Secretary-Treasurer—Dr. T. W. M. Long, Roanoke Rapids

Councillors 1940-1943

First District—Dr. H. D. Walker, Elizabeth City
Second District—Dr. Thomas Leslie Lee, Kinston
Third District—Dr. W. Houston Moore, Wilmington
Fourth District—Dr. G. W. Mitchell, Wilson
Fifth District—Dr. J. G. Pate, Gibson
Sixth District—Dr. George L. Carrington, Burlington
Seventh District—Dr. Robert H. Crawford, Rutherfordton
Eighth District—Dr. James H. McNeill, North Wilkesboro
Ninth District—Dr. I. E. Shafer, Salisbury
Tenth District—Dr. Harold S. Clark, Asheville

Delegates to the American Medical Society

Dr. Wingate Johnson (1940-1941)	Winston-Salem
Dr. W. T. Rainey (1940-1942)	Fayetteville

Alternates

Dr. Ross McElwee	Statesville
Dr. Charles Armstrong	Salisbury

Delegates to Medical Society of Virginia

Dr. T. L. Carter	Gatesville
Dr. John B. Ray	Leaksville-Spray
Dr. B. C. Willis	Rocky Mount
Dr. George Erick Bell	Wilson

Delegates to South Carolina Medical Society

Dr. Dewey Bridger	Bladenboro
Dr. J. A. Elliott	Charlotte
Dr. J. L. Blair	Gastonia

COMMITTEES

Advisory to Industrial Commission

Dr. J. F. Highsmith (Chairman)............Fayetteville
Dr. M. A. Pittman............Wilson
Dr. Newsom P. Battle............Rocky Mount

Advisory Committee on Maternity and Infancy for the Children's Bureau

Dr. Aldert S. Root (Chairman)............Raleigh
Dr. W. Z. Bradford............Charlotte
Dr. J. Street Brewer............Roseboro

Advisory to Woman's Auxiliary

Dr. Caroline McNairy (Chairman)............Lenoir
Dr. C. F. Strosnider............Hillsboro
Dr. J. W. Huston............Asheville
Dr. T. W. M. Long............Roanoke Rapids

Cancer

Dr. H. B. Ivey (Chairman)............Goldsboro
Dr. C. C. Carpenter............Winston-Salem
Dr. Thomas L. Lee............Kinston

Commercializing Drugs

Dr. James M. Northington (Chairman)......Charlotte
Dr. Julian A. Moore............Asheville
Dr. Aldert S. Root............Raleigh

Finance

Dr. Vance P. Peery (Chairman)............Kinston
Dr. G. Westbrook Murphy............Asheville
Dr. W. M. Coppridge............Durham

Hospitals

Dr. J. B. Whittington (Chairman)...Winston-Salem
Dr. W. I. Wooten............Greenville
Dr. R. T. Ferguson............Charlotte

Industrial Health

Dr. H. F. Easom (Chairman)............Sanatorium
Dr. M. T. Plyler............Nashville
Dr. John Donnelly............Charlotte

Legislation

Dr. Donnell B. Cobb (Chairman)............Goldsboro
Dr. George L. Carrington............Burlington
Dr. W. B. Dewar............Raleigh

Medical Society Foundation

Dr. L. C. Skinner............Greenville
Dr. R. L. Pittman............Fayetteville
Dr. John Q. Myers............Charlotte
Dr. R. S. McElwee............Statesville

Mental Hygiene

Dr. J. W. Vernon (Chairman)............Morganton
Dr. A. B. Choate............Charlotte
Dr. Elbert MacMillan............Winston-Salem

Moore County Medical Society Medal

Dr. Thurman D. Kitchin (Chairman)...Wake Forest
Dr. I. H. Manning............Chapel Hill
Dr. F. M. Hanes............Durham

Obituaries

Dr. J. B. Cranmer (Chairman)............Wilmington
Dr. Ben J. Lawrence............Raleigh
Dr. Paul H. Ringer............Asheville

Post-Graduate Medical Study

Dr. William H. Smith (Chairman)............Goldsboro
Dr. R. F. Leinbach............Charlotte
Dr. W. R. Berryhill............Chapel Hill
Dr. W. C. Davison............Durham
Dr. C. C. Carpenter............Winston-Salem

Printing

Dr. T. W. M. Long (Chairman)........Roanoke Rapids
Dr. B. C. Willis............Rocky Mount
Dr. Wingate Johnson............Winston-Salem

Public Relations

Dr. D. W. Holt (Chairman)............Greensboro
Dr. T. W. M. Long............Roanoke Rapids
Dr. P. P. McCain............Sanatorium

Social Security

Dr. Forrest M. Houser (Chairman)..........Cherryville
Dr. Paul H. Ringer............Asheville
Dr. W. C. Bostic............Forest City
Dr. T. G. Upchurch............Smithfield
Dr. B. J. Lawrence............Raleigh
Dr. Paul F. Whitaker............Kinston
Dr. M. P. Whichard............Edenton
Dr. K. B. Pace............Greenville
Dr. George L. Carrington............Burlington
Dr. Thomas L. Carter............Gatesville
Dr. T. W. M. Long............Roanoke Rapids

Socialized Medicine

Dr. James W. Vernon (Chairman)............Morganton
Dr. Roscoe D. McMillan............Red Springs
Dr. Hamilton W. McKay............Charlotte

Syphilis Control

Dr. J. C. Knox (Chairman)............Raleigh
Dr. Hamilton W. McKay............Charlotte
Dr. J. Roy Hege............Winston-Salem

Tuberculosis

Dr. S. M. Bittinger (Chairman)........Black Mountain
Dr. P. A. Yoder............Winston-Salem
Dr. J. H. Williams............Clinton

Board of Medical Examiners for Nurses

President—Miss Josephine Kerr, R.N.........Charlotte
Secretary-Treasurer and Education Director—Miss Bessie M. Chapman, R. N., Raleigh
Dr. B. C. Willis (From Hospital Association) Rocky Mount
Dr. Roscoe D. McMillan............Red Springs

Recommendation: That provision be made for the printing of the proceedings of the Woman's Auxiliary.

Recommendation: That the President-Elect hereafter nominate committees who will serve with him.

Committee on Arrangements

Dr. T. W. M. Long (Chairman).......Roanoke Rapids
Place of Meeting............Wrightsville Beach
Date of Meeting—to be determined by Executive Committee.

. . . Dr. Hubert B. Haywood assumed the Chair at this point . . .

Chairman Haywood: Gentlemen, is there any discussion of the proposition brought to us by the Nominating Committee?

President Allan: Mr. Chairman, I move that that report be adopted. I believe the understanding was that the incoming President-Elect from then on would pick his own committees, is that right?

Dr. Cobb: Yes, sir.

President Allan: Good. Then he can get rid of what he doesn't want.

All right, I make that motion, and with the proviso that we come back to Pinehurst instead of going to Wrightsville Beach. I make a motion that we adopt that report with those amendments.

Chairman Haywood: I have a right to make a motion, haven't I? I move that we vote on the report first without the place of meeting, and then come back to that.

President Allan: All right, I will amend the original motion, that we vote on the personnel as reported.

Chairman Haywood: Is there any discussion on the personnel as reported? Do I hear a second to the motion that we adopt the personnel report?

. . . The motion was duly seconded. . .

Chairman Haywood: All in favor of that motion make it known by saying "Aye"; opposed, "No". The "Ayes" apparently have it. The motion is adopted.

Now we come to the question of the place of meeting, I believe.

President Allan: I move we meet at Pinehurst instead of at Wrightsville Beach.

Chairman Haywood: Is there a second to that?

. . . The motion was duly seconded . . .

Chairman Haywood: Is there any discussion? All those in favor of that motion make it known by saying "Aye"; opposed, "No." The "Ayes" have it and the motion has been adopted, that the place of meeting be at Pinehurst.

Secretary-Treasurer Long: Mr. President, I judge that this resolution which came in here about printing the minutes for the Woman's Auxiliary will be handled by the Committee just as the Transactions of the House of Delegates are handled. I want to get myself clear on that.

Chairman Haywood: Is there any discussion, or suggestion about that?

Secretary-Treasurer Long: I would just like to get a ruling that everybody will understand. If it is left to me, I am going to tell you right now that I am going to print it in one issue of the **Journal**. That is the reason I want to get clear on that. Dr. Johnson and I are not clear as to how it should be done. I would like to have an expression on it.

Dr. W. G. Suiter (Halifax): I move the minutes of the Auxiliary be printed in the Journal.

. . . The motion was duly seconded . . .

Chairman Haywood: Is there any further discussion?

Dr. P. P. McCain: Mr. President, do I understand that that will be an abstract, the same as the proceedings of the House of Delegates?

Secretary-Treasurer Long: The Secretary has a right to edit everything published in that connection.

Chairman Haywood: All in favor of that motion say "Aye"; opposed, "No." The motion is carried, and the Secretary will be so governed.

Secretary-Treasurer Long: Mr. Chairman, so far as I know, that is all the business to come before the House.

President Allan: I would like to ask you one more thing. I would like to ask for an expression of the House as to whether they will approve my suggestion that we get our state institutions back again under the State Board of Health instead of other auspices. As it is set up at present, we have to work through the Legislative Committee.

At present blind, deaf, crippled, and crazy people are all in institutions that are under the supervision of the Department of Charities and Corrections. They have gone along for a hundred years, and haven't done a darn thing toward preventing anything, and never will do it as long as it is under that Department. It ought to be under medical auspices. In contrast, we have a fine program in connection with tuberculosis, which was started by the State Board of Health. I think all those institutions ought to be under the State Board of Health instead of Charities and Corrections.

I make a motion that our Legislative Committee undertake to get them back in the medical fold if they can.

. . . The motion was duly seconded . . .

Chairman Haywood: Is there any further discussion of that motion? I personally think that is a fine motion, Dr. Allan. There are so many separate agencies in Raleigh that they don't coordinate their efforts. If we can work it out with our Board of Health, with some sort of supervision and guidance, I think we will have made a big step forward.

All in favor of that motion please let it be known by saying "Aye"; opposed, "No". The motion is carried.

Dr. R. B. Davis: Are we open for new business?

Chairman Haywood: Yes.

Dr. Davis: We have a matter which I want to bring up very briefly. I am sure everyone is interested in the Industrial Commission, and the cutting of bills by the present adjuster, Dr. Horton. I had a long conference this morning with Dr. Suiter, the retiring chairman of the Advisory Committee to the Industrial Commission. Dr. Suiter's report to the House of Delegates is a very fair report, as I see it. However, Dr. Suiter himself admits that there isn't time to go into this matter as thoroughly as it needs to be gone into.

I have talked the matter over with a considerable number of people in the state, and a majority of those I have talked to have felt that there isn't the best feeling between the Industrial Commission and the medical profession at this time.

If we are going to have an Industrial Commission to work satisfactorily, we must get the medical profession behind it. If those to whom I have talked are a fair cross-section of the medical profession, they are certainly not behind it.

Dr. Suiter and I talked it over, and I have talked it over with several men since I have been here. We thought it might be a good plan if the President would appoint a committee to investigate the cutting of doctors' fees as compared with attorneys' fees, hospital fees, stenographers' fees, and the fees of everybody else who has something to do with receiving money through the Industrial Commission.

I would like to make a motion that the President appoint five men as an investigative committee to investigate the operation of the Industrial Commission, to investigate the relationship between the medical profession of the state and the Industrial Commission, and to bring back a report to the House of Delegates next year.

Chairman Haywood: Is there any discussion of Dr. Davis' resolution?

Dr. Suiter: Mr. Chairman, there is nothing at all inconsistent there with my report, and I would like to second that motion.

In connection with the discussion of it, I would like to read just one paragraph of my report: "The Commission also admits apparent injustices have been done in particular cases by the necessary policy of reducing all bills to a reasonable flat rate basis, but it contends that physicians treat many industrial cases that require little time and attention from which they derive a larger income than would be derived from a similar group of low-income cases in private practice. This, they claim, more than compensates for any reductions made in protracted cases. I would like for each of you to test this contention by your records and experience. The fee schedule with the review system has been in operation for four years. Review your industrial cases over that period of time and compare your industrial income with your private income from a similar wage group. If it is found among physicians generally that our industrial income does not compare favorably, then we shall have very just cause for complaint, and incontestable argument to base our demands for larger fees."

Chairman Haywood: Is there any further discussion?

Dr. N. P. Battle (Edgecombe-Nash). Recently, we have taken occasion to look into the question of cutting by the Industrial Commission, and I, personally, have had an opportunity to read Dr. Suiter's report in its entirety. I think, as is being said by everybody, that it shows a very fine work from the Advisory Committee.

Going over the statistics which it gives, you find, I think, that he says 86 per cent of the bills are paid without question. That leaves 14 per cent that are cut, and that 14 per cent totals $74,000. Going over our figures at the Park View Hospital in Rocky Mount, we find that the bills under $10 generally get through. Sometimes they take a dollar or two off, but as a general thing the bills, if they are below $10, get by pretty well. It is when they go above that they are cut, and not infrequently the cuts go up to 50 per cent.

Chairman Haywood: Thank you, Dr. Battle, for your discussion. Is there any further discussion?

Dr. M. A. Pittman (Wilson): Mr. Chairman, I have been on this Committee with Dr. Suiter for the past three meetings, and in our part of the country we have had very little complaint. It seemed to us in our meetings that the majority of the complaints that come in are probably due to the fact that the doctor making out the bill is not familiar with the fee schedule. For instance, since these three past meetings, we have raised every bill that, in our opinion, the fee schedule would permit. Some doctors would insist on putting $1.50 in for an infected finger dressing where a man might be making $10 or $12 a week, and the fee schedule says $1.

We read every one of these reports in our Committee, about forty at each meeting. We spent a day at it, and we summarized all the correspondence. Of course, the doctors weren't there, but all the correspondence was there, pro and con. To the best of our ability, we raised as many as possible. In the majority of them, we found that the Industrial Commission was adhering to the rules and that they were correct. Due to the fact that the doctors in the state made the fee schedule, we couldn't do any more about that.

I think they are trying to cooperate with the doctors. There are two sides to the proposition. Our percentage of doctors' bills in North Carolina is about five per cent higher than in any other state in the Union. The insurance carriers are kicking on that. Our doctors' bills went up last year 3.8 per cent over the previous year. I think we are about 36 per cent now, Dr. Suiter.

Dr. Suiter: 36.2 per cent.

Dr. Pittman: In New York State, where they have had an Industrial Commission for years, it is about 29 per cent, if I am not mistaken. I believe that if every doctor who makes out the bills would be better acquainted with the fee schedule and would write some sort of explanation, there would be no cuts at all.

Chairman Haywood: Is there any further discussion? Dr. Davis, would you like to restate your motion after this discussion?

Dr. Davis: The motion was that the President appoint a committee of five, which will be known as the Investigative Committee, for the purpose of studying the relationship between the medical profession and the Industrial Commission.

Chairman Haywood: Thank you, Dr. Davis. Is there a second to that motion?

. . . The motion was duly seconded . . .

Chairman Haywood: The motion has been seconded. All in favor of that motion let it be known by saying "Aye"; all opposed to that motion let it be known by saying, "No." The motion is carried. Dr. Long, I believe this committee will be appointed by the incoming President.

> . . . The Investigative Committee is composed of the following men: W. G. Suiter, Chairman, Weldon; W. Houston Moore, Wilmington; T. C. Bost, Charlotte; R. B. Davis, Greensboro; and Frank Wilson, Raleigh.

Secretary-Treasurer Long: That will be done later.

Chairman Haywood: Is there any other unfinished business? Is there any new business?

President Allan: I move we adjourn.

Secretary-Treasurer Long: The last general session will be held in the Ball Room at five o'clock.

. . . The meeting thereupon adjourned at three-thirty o'clock.

PROCEEDINGS

EIGHTY-SEVENTH ANNUAL SESSION
MEDICAL SOCIETY
of the
STATE OF NORTH CAROLINA
PINEHURST

FIRST GENERAL SESSION

Tuesday Morning, May 14, 1940

The first general session of the Eighty-Seventh Annual Session of the Medical Society of the State of North Carolina convened at ten o'clock, Carolina Hotel, Pinehurst, North Carolina, Dr. William Allan, President, presiding.

Secretary-Treasurer Long: The Eighty-Seventh Annual Session of the Medical Society of the State of North Carolina will come to order. At this time it gives me great pleasure to present to you our President, Dr. William Allan.

President Allan: Dr. Long, Members of the Medical Society, Ladies and Gentlemen: It seems to be customary for the President to make a talk, whether he has anything to say or not, and I won't break that custom.

. . . President Allan presented his prepared address, which was published in the June issue of the North Carolina Medical Journal.

Secretary-Treasurer Long: I will ask the President-Elect, Hubert B. Haywood, to present the President's Jewel to Dr. Allan at this time.

President-Elect Haywood: Mr. Chairman, Ladies and Gentlemen: The rapid growth of medical science during the last few years has made it almost impossible for a single individual to master the entire field. In internal medicine, as in other branches of human knowledge, the age of specialization has arrived, and some of our ablest practitioners devote themselves in great measure to the mastering of one disease.

Dr. William Allan is an able physician in the field of internal medicine, and he is without a peer in our state. In his chosen field of research in heredity, he is blazing a path for others to follow. He has shown what heredity may do. This is constructive work and has a broad aspect. It concerns the present welfare of many of our people and of unborn generations. The practical application of this knowledge, for the improvement of the human race in North Carolina, is our duty and should be one of the major objectives of our Society. As an officer of this Society I pledge my support to any program which may arise from the foundations of this useful knowledge brought to us by Dr. Allan.

This token, Dr. Allan, presented to you by our Society, has a far greater significance than the recognition of your year of unusual usefulness to us. We praise you for your arduous labors; we recognize your accomplishments and your successful achievements; we acknowledge our debt of gratitude to you.

Dr. Allan, we wish you God-speed and a long continuance of your happy and useful life.

President Allan: Dr. Haywood, Ladies and Gentlemen: I know of no higher compliment that can be paid to a man in this state than to be head of the State Medical Society, because of the intelligence and the character of the men who make up this Society. I think, taking it all in all, they are the finest bunch of men I know, and I thank you.

The next item on the program is the report of the Obituary Committee, by Dr. J. B. Cranmer of Wilmington.

Dr. J. B. Cranmer (Wilmington): Mr. President, Fellows of the Medical Society of the State of North Carolina, Ladies and Gentlemen: I call upon you this morning to pause for a few moments to share with the Obituary Committee the sorrow that we feel in the passing of our beloved fellows, whose deaths have occurred during the past year, in the affection and sympathy that we have for their loved ones, and in the reverence and respect that we hold for their memory.

After the names of our fellows who have joined the vast army of the immortals have been read, I shall ask you to arise and join the Committee in one moment of silent prayer.

The Secretary will please read the names of those who have passed away.

. . . Secretary-Treasurer Long read the names of the doctors who had passed away as follows:

Dr. John M. Allhands	Cliffside
Dr. John Berry	Greensboro
Dr. J. H. Boyles	Greensboro
Dr. J. W. Campbell	Gastonia
Dr. E. S. Clark	Clarkton
Dr. Howard J. Combs	Elizabeth City
Dr. Platt W. Covington	Wadesboro and Salt Lake City
Dr. C. J. Edwards	Raleigh
Dr. Robert L. Felts (Honorary Fellow)	Durham
Dr. John S. Gibson	Gibson
Dr. J. C. Green	Greenville
Dr. James DaCosta Highsmith	Fayetteville
Dr. J. Franklin Highsmith	Fayetteville
Dr. E. R. Hines	Rocky Mount
Dr. W. O. House	Tarboro
Dr. L. W. Hunter (Honorary Fellow)	Charlotte
Dr. Robert D. Jewett (Honorary Fellow)	Wilmington
Dr. James T. Justice	Kernersville
Dr. James A. Keiger	Greensboro
Dr. H. W. Knight	Bostic
Dr. H. F. Long (Honorary Fellow)	Statesville
Dr. C. D. Lucas	Charlotte
Dr. Charles S. Mangum	Chapel Hill
Dr. W. J. Meadows (Honorary Fellow)	Greensboro
Dr. W. C. Mebane, Sr. (Honorary Fellow)	Wilmington
Dr. Jennis Morrill	Falkland
Dr. T. V. Moore	Delco
Dr. J. B. Person (Honorary Fellow)	Selma
Dr. C. C. Phillips	Charlotte
Dr. F. M. Register (Honorary Fellow)	Kinston
Dr. T. S. Royster	Henderson
Dr. Martin L. Stevens (Honorary Fellow)	Asheville
Dr. Howard L. Sumner	Asheville
Dr. John Hill Tucker (Honorary Fellow)	Charlotte
Dr. W. W. Whittington	Snow Hill

Dr. Cranmer: Will you please arise for just a minute?

. . . The members arose and stood in silence . . .

Dr. Cranmer: The grace of our Lord Jesus Christ, the love of God, and the fellowship of the Holy Ghost be with us all ever more.

President Allan: The next item on the program is an address by Dr. Fred M. Hanes entitled, "Sprue."

. . . Dr. Hanes presented his paper.

President Allan: Dr. Hanes, we are indebted to you for a very interesting talk on one of our indigent diseases, about which we need to know more.

The next thing on the program is the award of the Moore County Medical Society's medal to Dr. Donnell Cobb. I will ask Dr. Hanes if he will present that token.

Dr. Hanes: I have been asked, as a member of the Committee of Award, to give to Dr. Donnell Cobb the medal of the Moore County Society for having presented last year, before his section, the paper which has been adjudged the most thorough and the best paper read before the State Society.

It gives me great pleasure, Dr. Cobb, to present this medal to you in the name of the Society.

Dr. Donnell B. Cobb (Goldsboro): Thank you, Dr. Hanes.

President Allan: We will next have an address by Dr. F. B. Watkins, Superintendent of the State Hospital, Morganton, "A Report on the Trend of Mental Disease in the Western State Hospital District of North Carolina." He represents the Section on the Practice of Medicine.

. . . Dr. Watkins presented his prepared paper, at the conclusion of which he made the following remarks:

Dr. Watkins: I want to pay tribute to the Federal Government, and to the present state administration for the amount of work which they have done for the insane in North Carolina within the last two years. This administration has done more than any other administration since the state was founded.

We are not quite finished with our work up there, but we will be in a month or two, and after that time, we will be glad to have any of you and all of you come and see what has been done.

President Allan: Probably the heaviest burden which our civilization carries is that of mental disease, and we are very grateful to Dr. Watkins for coming and talking to us about it. The reason we know so little about it is because the men who work in that field rarely come and tell us what the problems are. I wish they would come much more often.

The next paper on the program is by Dr. Arthur H. London, "The Aims of the Academy of Pediatrics in North Carolina."

. . . Dr. London presented his prepared paper, at the conclusion of which he made the following remarks:

Dr. London: This summer the Academy is making an effort to join up the work of all of the individual members of the pediatric profession in each state, each region, and in the United States, with an effort to try to promote child health and welfare.

Any suggestions which any physicians have, which may be used for the betterment of child health and child welfare conditions in the State of North Carolina, will be very greatly appreciated by the Academy. If you will write those suggestions to me, I will see that they are disseminated to the proper places.

President Allan: For some years in this state the best organized and most active group has been the pediatric men. Thank you very much, Dr. London, for coming and giving us the report.

Dr. Hanes: I want to make an announcement in relation to the very excellent paper by Dr. Watkins which may be of interest to some. You will remember a few years ago there was a survey made by the Rockefeller Foundation of the state, both economic and psychiatric. We still have a rather large number of those reports on hand. If any of you would like to have a copy of this report and will be good enough to send me a letter at Duke Hospital, we will be very glad to mail you one. It is a report that is full of information of all sorts, and even though you are not a psychiatrist I think it would interest you, as a North Carolinian, to see the data that is in that report.

President Allan: The meeting is adjourned.

. . . The meeting thereupon adjourned at eleven-thirty o'clock.

SECOND GENERAL SESSION

Wednesday Morning, May 15, 1940

The second general session convened at nine twenty-five o'clock.

President Allan: The meeting will come to order.

We will have the paper by Dr. Thomas Leslie Lee, entitled, "Our Efforts to Reduce the Morbidity of Child Bearing," from the Section on Gynecology and Obstetrics.

. . . Dr. Lee presented his prepared paper.

President Allan: Our next paper is, "The Operation of Blood Banks in the Small Hospital", by a guest speaker, Dr. R. B. Davis of Greensboro.

. . . Dr. Davis presented his prepared paper.

President Allan: The next paper is also by guest speakers: "The Use of Plasma as a Substitute for Whole Blood", by Drs. John Elliott and W. L. Tatum of Salisbury.

President Allan: These two papers by the guest speakers have been most interesting and instructive. I am sure I voice the sentiment of everyone here in extending to them our sincere thanks. I hope that they will have time to come next year and tell us more of the excellent work they are doing.

The next paper is from the Section on Public Health and Education, "Twenty-Five Years Health Progress in North Carolina," by Dr. Roy Norton of Chapel Hill.

Dr. Roy Norton: In the beginning, I would like to thank the many physicians in the state who have replied to my request for information. There might be no excuse for giving a paper like this in that it is not any contribution to our scientific information, but I thought perhaps just trying to orient ourselves a little in our progress might not be entirely out of place.

. . . Dr. Norton presented his prepared paper.

Secretary-Treasurer Long: It gives me pain to inform the body that two of our loyal and devoted members—one a Past President—are ill. Dr. I. H. Manning is ill in the Watts Hospital in Durham, and Dr. Ben J. Lawrence of Raleigh is seriously ill in the Rex Hospital in Raleigh.

At this time I move you that they be sent an expression of love and affection from this body.

. . . The motion was carried.

President Allan: The next paper is from the Section on Ophthalmology and Otolaryngology, entitled, "Headache," by Dr. B. W. Fassett of Durham.

. . . Dr. Fassett presented his prepared paper.

President Allan: We have already passed the time when we were supposed to have a meeting with the State Board of Health. Dr. Reynolds, however, says he only needs five minutes for his business. What is your wish? Shall we go on or stop?

. . . It was moved and duly seconded that the session be continued.

President Allan: All in favor say "Aye"; opposed. It is carried.

The next paper is from the Section on Surgery, entitled, "Appendicitis, the Two P's, and the Highest Mortality in the Civilized Word," by Dr. D. B. Cobb of Goldsboro.

. . . Dr. Cobb presented his prepared paper.

President Allan: Dr. Cobb, we are indebted to you for a most interesting discussion of a subject of perennial interest.

We will now go into a joint session with the State Board of Health, and I will ask Dr. Craig to preside.

. . . The meeting thereupon adjourned.

CONJOINT SESSION

Wednesday, May 15, 1940

The Conjoint Session of the Medical Society of the State of North Carolina and the State Board of Health convened at twelve-ten o'clock, p. m., Dr. S. D. Craig presiding.

Chairman Craig: The session will please come to order. It is very pleasing to see each year more members take an interest in this conjoint meeting.

I will ask Dr. Reynolds, the Secretary of the State Board of Health, for his report.

. . . Dr. Reynolds presented part of his prepared report at the conclusion of which he made the following remarks:

Dr. Reynolds: I will not read any further, but I want to call your particular attention to the new plant at the State Laboratory and its importance to you. I hope that every physician in the state will visit that laboratory and your Health Department, and aid us in carrying it on in a manner that will aid you.

Chairman Craig: Gentlemen, you have heard this report. Is there any discussion? If not, will someone make a motion to adopt the report?

. . . It was moved and duly seconded that the report be adopted.

Chairman Craig: All in favor of this signify by saying "Aye"; opposed, "No." It is carried.

If there is no further business to come before the meeting we will adjourn.

. . . The meeting thereupon adjourned at twelve-forty o'clock.

THIRD GENERAL SESSION

Wednesday Afternoon, May 15, 1940

The meeting convened at five-five o'clock, President Allan presiding.

Secretary-Treasurer Long: The final General Session will come to order.

President Allan: We will ask the Secretary to make a report from the House of Delegates.

Secretary-Treasurer Long: Mr. President, the first is the report of the Nominating Committee.

. . . Secretary Long presented the report of the Nominating Committee which appears in the Transactions of the House of Delegates.

Secretary-Treasurer Long: Mr. Chairman, that Committee's report was accepted, with one exception. The House of Delegates voted to hold the next annual meeting at Pinehurst instead of at Wrightsville Beach. That is all the report of the Nominating Committee, with that amendment added by the House of Delegates.

There were two amendments to the By-Laws passed at the first session of the House of Delegates which, under the By-Laws, had to lay over until the second meeting.

The first amendment is that the report of the Finance Committee be accepted and that the Secretary's salary be raised from $1200 per year to $2400 per year.

The second amendment is to amend Chapter 4, Section 1 of the By-Laws, the last sentence thereof, so that it will read, "The first session of the House of Delegates shall be held at 2 p. m. the day preceding the first meeting of the Society at which session as much as possible of the business of the House shall be transacted."

That is the report of the House of Delegates, Mr. President.

President Allan: Gentlemen, you have heard the report of the House of Delegates. What will you do with it?

Dr. Carl V. Reynolds: I move it be approved and adopted.

. . . The motion was duly seconded.

President Allan: Is there any discussion of the motion? If not, all in favor please say "Aye"; opposed, "No." The report is adopted as read.

Is there any unfinished or new business to come before the house? If not, I will ask Dr. Paul McCain and Dr. Reynolds to escort the incoming President to the platform.

It is with a great deal of pleasure that I turn over this gavel to an outstanding exponent of North Carolina medicine. Dr. Hubert Haywood of Raleigh has been an outstanding doctor and an outstanding man in this state ever since I have lived here, and I don't know of anybody into whose hands I would rather turn over the Medical Society than Dr. Haywood.

President Haywood: Dr. Allan, I am deeply indebted to you for those kind words.

. . . President Haywood gave his inaugural address, which was published in the June issue of the **North Carolina Medical Journal.**

President Haywood: If there is no other business to come before this meeting, I now declare the 1940 meeting of the Medical Society of the State of North Carolina adjourned sine die.

. . . The meeting thereupon adjourned at five-twenty o'clock.

ALPHABETICAL LIST OF FELLOWS FOR 1940 WITH POSTOFFICE ADDRESSES

Honorary Members

Name	*Address*
R. L. Payne, Jr.	Norfolk, Va.
Paul V. Anderson	Richmond, Va.
Stuart McGuire	Richmond, Va.
William Seaman Bainbridge	New York, N. Y.
William Sharpe	New York, N. Y.
James K. Hall	Richmond, Va.
*Milton J. Rosenau	Chapel Hill, N. C.

Fellows and Honorary Fellows

Name	*Address*
*Abernathy, C. O., (Hon.), U	Raleigh
Abernathy, H. N., (Hon.), Ob	Charlotte
Achard, Lucien	Morganton
*Adams, C. N., ObG	Winston-Salem
Adams, J. R., Pd	Charlotte
Ader, O. L., GP	Walkertown
Albright, Sam	Belmont
Alexander, G. T.	Thomasville
Alexander, J. M., GP	Charlotte
Alexander, J. R., (Hon.)	Charlotte
*Allan, William, (Hon.), I	Charlotte
*Allen, A. L., NP	Roxboro
*Allen, C. I., S	Wadesboro
Allen, G. C., GP	Lumberton
Allen, J. A., (Hon.), GP	New London
Allen, M. H., GP	Cramerton
Allen, W. O., GP	Hendersonville
Allgood, R. A., GP	Fayetteville
Alyea, E. P., U	Durham
Ambler, A. C., Anes	Asheville
*Anders, McT. G., (Hon.), GP	Gastonia
Anderson, C. A., (Hon.)	Burlington
*Anderson, C. P., PH	Durham
Anderson, E. C., GP	Wilmington
Anderson, J. B., GP	Asheville
*Anderson, R. S., S	Rocky Mount
Anderson, W. B., OALR	Durham
*Anderson, W. H., (Hon.), PH	Wilson
*Andrew, J. M.	Lexington
Andrew, L. A., Jr., U	Durham
Anthony, J. E.	Kings Mountain
Anthony, W. A., GP	Gastonia
*Apple, E. D.	Greensboro
Archer, I. J., (Hon.), T	Black Mountain
Arena, J. M., Pd	Durham
*Armistead, D. B., I	Greenville
*Ashby, E. C., S	Mt. Airy
Ashby, J. W., P	Raleigh
Ashe, J. R., Pd	Charlotte
Ashford, C. H., GP	New Bern
Ashworth, B. L., (Hon.)	Marion
Austin, D. R.	Charlotte
Austin, F. D., Jr.	Charlotte
*Avery, E. S., I	Winston-Salem
Aycock, E. B.	Greenville
Aycock, F. M., GP	Princeton
Aydlett, H. T., (Hon.), GP	Greensboro
Aydlette, J. P., (Hon.)	Earl
Ayers, J. S., GP	Clinton
Baier, G. F., Jr., GP	Asheville
*Bailey, C. W.	Rocky Mount
*Bailey, M. H.	Elizabeth City
*Baker, H. M., S	Lumberton
Baker, L. D., Or	Durham
Baker, R. D., Path	Durham
*Baker, T. W.	Charlotte
Baker, W. E.	Arden
Bandy, W. G., GP	Lincolnton
Banner, A. C., OALR	Greensboro
Banner, C. W., (Hon.), ALR	Greensboro

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* Present at 1940 meeting.

Name	*Address*
Barbee, G. S.	Zebulon
Barbour, E. G., GP	Morganton
*Bardin, R. M., PH	Rockingham
Barefoot, G. B., I, Path, R	Wilmington
Barefoot, W. F., S	Wilmington
Barnes, Dempsey	Asheboro
Barnes, H. E	Hickory
Barnes, J. T	Asheboro
*Barnes, Tiffany	Asheboro
Barrett, H. P., GP	Charlotte
Barrett, J. M., GP	Greenville
*Barrier, H. W., P	Concord
*Barron, A. A., I	Charlotte
*Basnight, T. G., (Hon.), GP	Stokes
*Bass, H. H	Henderson
Bass, S. P., (Hon.), GP	Tarboro
*Battle, J. T. J., (Hon.), Ins	Greensboro
Battle, M. W., Ob	Rocky Mount
*Battle, N. P., S	Rocky Mount
*Baxter, O. D	Charlotte
Beale, S. M	Elkin
*Beall, L. G., (Hon.), NP	Black Mountain
Beam, H. M	Roxboro
Beam, R. S., OALR	Lumberton
Beasley, E. B., GP	Fountain
Beavers, J. W., GP	Kernersville
Beckwith, R. P., GP	Roanoke Rapids
Belcher, C. C	Asheville
*Bell, A. E., (Hon.), GP	Moooresville
*Bell, F. O	Burlington
*Bell, G. E., ObG	Wilson
*Bell, S. A	Cycle
Bellamy, R. H., (Hon.), GP	Wilmington
*Belton, J. F	Winston-Salem
*Benbow, E. V., S	Winston-Salem
Benbow, J. T	Winston-Salem
Bender, John, GP	Red Springs
*Bender, J. R., GP	Lexington
Bennett. E. C	Elizabethtown
Bennett, J. H., (Hon.), GP	Wadesboro
Benson, N. O., U	Lumberton
Bentley, J. G., GP	Pores Knob
Benton, G. R., Jr	Goldsboro
Benton, G. R., Sr	Fremont
*Benton, W. J., T	Jamestown
*Berryhill, W. R., I	Chapel Hill
Best, D. E	Goldsboro
*Best, G. E., GP	Clinton
Best, H. B., (Hon.), GP	Wilson
*Biggs, J. I	Lumberton
Biggs, M. H., (Hon.). S	Rutherfordton
Bigler, V. L., I	Albemarle
*Billings, G. M., ALR	Morganton
*Bitting, N. D., (Hon.), S	Durham
*Bittinger, S. M., T	Black Mountain
Bizzell, M. E., OALR	Goldsboro
Bizzell, T. M	Goldsboro
*Black, G. W	Charlotte
Black, P. A. L., GP	Wilmington
Black, O. R	Landis
Blackshear, T. J., OALR	Wilson
*Blackwelder, V. H., S	Lenoir
Blair, Andrew, I	Charlotte
*Blair, J. L., GP	Gastonia
Blair, J. S	Gastonia
Blair, M. P., (Hon.), GP	Marshville
Bland, C. A	Forest City
Bliss, F. E., S	Fletcher
Block, M. E	Lexington
Blue, A. McN	Carthage
*Blue, Waylon, GP	Jonesboro
*Blumberg, Alfred, Path	Asheville
*Boice, E. S., S	Rocky Mount
Bolt, C. A., GP	Marshville
Bolus, Michael, D	Raleigh
Boney, E. R	Kinston
Bonner, J. B., GP	Aurora
*Bonner, K. P. B., (Hon.), Pd	Morehead City
*Bonner, M. D., T	Jamestown
*Bonner, O. B., OALR	High Point
*Booker, E. N., GP	Selma
*Boone, W. H., (Hon.), GP	Durham
*Boone, W. W., GP	Durham
*Bost, T. C., S	Charlotte
Bostic, W. C., (Hon.)	Forest City
Bostic, W. C., Jr	Forest City
*Bowen, J. P., S	Aberdeen
Bowers, M. A., GP	Winston-Salem
*Bowles, F. N., GP	Durham
Bowling, E. H., (Hon.), GP	Durham
Bowling, J. M., GP	Durham
*Bowman, E. L., GP	Lumberton
*Bowman, H. E., (Hon.)	Aberdeen
*Bradford, G. E., ALR	Winston-Salem
*Bradford, W. B., ObG	Charlotte
*Bradford, W. Z., ObG	Charlotte
Bradshaw, T. G., GP	Wilson
*Bradsher, J. S., I	Stovall
Brandon, H. A., GP	Yadkinville
Brantley, Hassell, (Hon.), GP	Spring Hope
Brantley, J. C., GP	Spring Hope
Brantley, T. H	Charlotte
Bray, T. L	Plymouth
Brenizer, A. G., Jr., S	Charlotte
*Brewer, J. S., GP	Roseboro
Brewton. W. A., S	Enka
*Brian, Earl, I	Raleigh
*Bridger, D. H	Bladenboro
Bridges, D. T	Lattimore
*Briggs, H. H., Jr., Oph	Asheville
Brinkley, H. M., GP	Durham
*Bristow, C. O., Pd	Rockingham
*Britt, C. S., Ob	Charlotte
Britt, J. N., GP	Lumberton
*Britt, T. C	Mt. Airy
*Brockman, H. L., S	High Point
Brooks, E. B., I	Winston-Salem
*Brooks, F. P., GP	Greenville
Brooks, H. E., GP	Clayton
*Brooks, R. E., U	Burlington
Brookshire, H. G., (Hon.)	Asheville
Broughton, A. C. Jr., GP	Raleigh
*Broun, M. S., OALR	Roanoke Rapids
Brown, C. E	Salisbury
Brown, C. R	Goldsboro
*Brown, G. W., (Hon.), GP	Raeford
Brown, J. A	Banner Elk
Brown, J. P., (Hon.)	Fairmont
Brown, J. S., Jr. S	Hendersonville
Brown, J. S., Sr., (Hon.), Ob	Hendersonville
Brown, K. E., ObG	Asheville
*Brown, W. M. B., ALR	Greenville
Brownsberger, E. M., GP	Biltmore
Brownsberger, J. F., S	Fletcher
*Buchanan, L. T., GP	Laurinburg
Buckner, J. M., GP	Swannanoa
Buffaloe, J. S., (Hon.), GP	Garner
*Bugg, C. R., Pd	Raleigh
*Buie, R. M., PH	Greensboro
*Bulla, A. C., PH	Raleigh
*Bullitt, J. B., Path	Chapel Hill
Bullock, D. D., GP	Rowland
Bullock, T. C., (Hon.), GP	Autryville
Bulluck, E. S., S	Wilmington
Bunch, Chas., S	Charlotte
Bundy, William	N. Wilkesboro
Bunn, J. H., PH	Smithfield
Bunn, J. P., GP	Rocky Mount
Bunts, R. C., U	Asheville
Burleson, W. B., GP	Plumtree
Burns, J. E., Pd	Concord
Burt, B. W., (Hon.), GP	Holly Springs
Burton, C. N., ObG	Asheville
*Busby, G. F., S	Salisbury
Busby, Julian	Kannapolis
*Butler, L. J., Pd	Winston-Salem
Butt, R. B	Marion
*Byerley, A. B., (Hon.)	Cooleemee
Byerly, J. H., GP	Sanford
*Byerly, W. G., PH	Lenoir
Bynum, W. H., GP	Germanton
Byrd, A. L	Reidsville
*Byrd, W. C	Angier
*Byrnes, T. H., Path	Durham
Caddell, G. C., GP	Hoffman
Caldwell, R. M	Mt. Airy
*Callaway, J. L., D	Durham
*Campbell, A. C., GP	Raleigh
Cannon, E. G., GP	Hope Mills
Cardwell, D. W., GP	Greensboro
*Carlton, R. L., (Hon.), PH	Winston-Salem
Carlyle, J. B	Burlington
Carmichael, T. W., GP	Rowland
*Carpenter, C. C., Path	Winston-Salem
Carr, M. L., GP	Kinston
*Carrington, G. L., S	Burlington
Carrington, S. M., S	Oxford
*Carroll, F. W., GP	Hookerton
Carter, Bayard, ObG	Durham
*Carter, T. L	Gatesville
*Carter, W. D., PH	Wadesboro
Casteen, Kenan, OALR	Leaksville
Castelloe, Cola, S	Windsor
Cater, C. D	Greensboro
*Cathell, E. J., S	Lexington
Cathell, J. L., S, GP	Lexington
*Caviness, V. S., I	Raleigh
Caviness, Z. M., (Hon.), Pr	Raleigh
*Cekada, E. B., I	Durham
Chapman, E. J., Oto and Bron	Asheville

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* Present at 1940 meeting.

Name	*Address*
*Chester, P. J., OALR	Southern Pines
*Chiles, G. C., S	Sanford
*Choate, A. B.	Charlotte
Clapp, H. L., GP	Swannanoa
*Clark, B. T., S	Wilson
Clark, D. D.	Clarkton
Clark, H. S., S	Asheville
Clark, Milton, GP	Goldsboro
Clary, W. T., ObG	Greensboro
Clay, E. L., I	Oxford
*Clayton, M. B.	Statesville
*Clement, E. B., (Hon.), OALR	Salisbury
Cloninger, K. L., ALR	Conover
Clyatt, C. E.	Denton
*Cobb, D. B., S	Goldsboro
*Cobb, W. H., (Hon.)	Goldsboro
Cochrane, J. D.	Newton
*Cocke, C. H., T	Asheville
Cocke, J. E., (Hon.)	Asheville
Codington, H. A., S, GP	Wilmington
Coffey, J. C., GP	Cliffside
Cole, H. A.	Rocky Mount
*Cole, W. F., S	Greensboro
*Coleman, G. S., (Hon.), Pr	Raleigh
Coleman, L. A., OALR	Salisbury
Collings, R. M., GP	Greensboro
Combs, Fielding	Winston-Salem
*Combs, J. J., GP	Raleigh
*Cook, H. L., Jr., OALR	Greensboro
*Cook, J. L., PH	Greensboro
*Cook, W. E.	Mebane
*Cooke, G. C., S	Winston-Salem
*Cooley, S. S., GP	Asheville
Cooper, A. D., Allergy	Durham
*Cooper, G. M., (Hon.), PH	Raleigh
*Coppedge, T. O., PH	Nashville
*Coppridge, W. M., U	Durham
*Corbett, C. L.	Dunn
Corbett, J. P.	Swansboro
*Cornell, W. S.	Charlotte
*Cornwell, A. M., S	Lincolton
*Corpening, O. J., (Hon.)	Granite Falls
Costner, W. V., Pd	Lincolnton
*Couch, V. F., OALR	Winston-Salem
Covington, J. M., GP	Wadesboro
Covington, J. M. C., OALR	Roanoke Rapids
Cox, A. M.	Madison
*Cox, G. S., GP	Tabor City
Cox, S. C., GP	Kerr
Cozart, B. F.	Reidsville
*Cozart, S. R., I	Greensboro
*Cozart, W. S., GP	Fuquay Springs
Craddock, A. B., I	Asheville
Craig, R. L., N	Durham
*Craig, S. D., I	Winston-Salem
*Cranmer, J. B., (Hon.), GP	Wilmington
*Cranz, O. W., S	Kinston
Craven, Erle, Jr.	Lexington
Craven, F. T.	Concord
Craven, Jean	Lexington
Craven, T. W.	Huntersville
Craven, W. W.	Charlotte
Crawford, R. H., S	Rutherfordton
Cree, M. B., S	Concord
*Crisp, S. M., GP	Greenville
*Crispell, R. S., NP	Durham
Cromartie, R. S., (Hon.)	Elizabethtown
*Croom, R. D., Jr.	Maxton
*Crouch, A. McR., Pd	Wilmington
Crouch, T. D.	Stony Point
Crow, S. L., I	Asheville
*Crowell, L. A., Jr., I	Lincolnton
Crowell, L. A., Sr., S	Lincolnton
*Crump, C. L., OALR	Asheville
Crump, Curtis, I	Asheville
*Crumpler, A. G., GP	Fuquay Springs
Crumpler, J. F., Pd	Rocky Mount
*Crumpler, Paul, (Hon.), GP	Clinton
Cummings, M. P.	Reidsville
*Currie, D. S., (Hon.), GP	Parkton
*Cutchin, J. H., GP	Whitakers
Dale, G. C., Goldsboro	Wayne
Daligny, Chas., (Hon.)	Troy
*Dalton, W. N., (Hon.), GP	Winston-Salem
Daniel, N. C., (Hon.), Pd	Oxford
*Daniel, W. E., U	Charlotte
Daniels, O. C. (Hon.), OALR	Oriental
Daughtridge, A. L.	Rocky Mount
Davidian, V. A., S	Smithfield
*Davis, J. M., Pd	Wadesboro
Davis, J. P.	Winston-Salem
Davis, J. W., S	Statesville
*Davis, P. B., GP	High Point
Davis, R. D., ObG	Kinston
Davis, T. W., (Hon.), OALR	Winston-Salem
*Davison, W. C., Pd	Durham
Dawson, J. N.	Lake Waccamaw
Dawson, W. E., GP	Hookerton
Deans, A. W., GP	Battleboro
DeArmon, J. McC., (Hon.)	Charlotte
*DeCamp, A. L., ObG	Fayetteville
Dees, D. A., OALR	Bayboro
*Dees, J. E., U	Durham
Dees, R. E., (Hon.), S	Greensboro
*Dees, R. O., (Hon.), S	Greensboro
DeLaney, C. O., U	Winston-Salem
*Denholm, J. S.	Burlington
Dewar, W. B., I	Raleigh
Dick, J. V., (Hon.), GP	Gibsonville
*Dickinson, E. T., (Hon.), ALR	Wilson
*Dickinson, K. L., Ob	Raleigh
*Dickinson, M. S., GP	Oakboro
*Dixon, G. G., GP	Ayden
Dixon, G. E., (Hon.), GP	Hendersonville
Dixon, W. H.	Rocky Mount
*Doffermyre, L. R.	Erwin
*Donnelly, G. L., Pharmocology	Chapel Hill
Donnelly, John	Charlotte
Doughtery, J. H., U	Asheville
*Drummond, C. S., Pr	Winston-Salem
*Duckett, V. H., GP	Canton
Dula, F. M., S	Lenoir
*Duncan, S. A., GP	Benson
Dunn, R. B., ObG	Greensboro
*Durham, C. W., GP	Greensboro
*Eagle, J. C.	Spencer
Eagle, W. W., OALR	Durham
Earle, J. B., GP	Siler City
*Easom, H. F., PH	Sanatorium
Eaves, R. S.	Rutherfordton
Eckel, O. F., (Hon.), Anes	Asheville
Edmondson, Frank, GP	Tarboro
Edwards, B. O., (Hon.), T	Asheville
Edwards, F. D., GP	Lawndale
Edwards, V. E., GP	Stokesdale
*Eldridge, C. P., GP	Raleigh
*Eldridge, H. A., OALR	Benson
Elfman, S. L., GP	Fayetteville
*Elias, L. W., (Hon.), Pd	Asheville
*Eller, A. J., (Hon.), PH	Wilkesboro
*Ellington, A. J., OALR	Burlington
Ellinwood, E. H.	Snow Hill
*Elliott, A. H., PH	Wilmington
Elliott, G. D., GP	Fair Bluff
*Elliott, J. A., D	Charlotte
Elliott, J. C., S	Oxford
*Elliott, W. F., OALR	Lincolnton
Elliott, Wm.	Forest City
Emerich, Paul	Kinston
*Ennett, N. T., PH	Greenville
*Ervin, J. W., GP	Morganton
Erwin, E. A., GP	Laurinburg
Evans, J. E., S	Wilmington
*Faison, Elias	Charlotte
Fales, Robert, GP	Wilmington
Falls, Fred	Lawndale
*Farmer, W. D., OARL	Durham
*Farrington, R. K., S	Thomasville
Farthing, J. W., S	Wilmington
*Fassett, B. W., (Hon.), OALR	Durham
Faulk, J. G., S	Monroe
Fauntleroy, J. W., GP	Zirconia
*Fay, O. F., Oph	Wilmington
Fearing, Isaiah, (Hon.)	Elizabeth City
*Fearington, J. C. P.	Winston-Salem
Feldman, L. H., I	Asheville
*Felton, R. L., Jr., GP	Carthage
Fenner, E. F., (Hon.)	Henderson
*Ferguson, G. B., OARL	Durham
*Ferguson, R. T., G	Charlotte
Ferneybough, W. T.	Reidsville
Fetner, L. M.	Lenoir
*Fetzer, P. W.	Reidsville
Field, B. L., GP	Salisbury
*Fields, L. E., GP	Chapel Hill
Fike, R. L., GP	Wilson
Finch, O. E., I	Raleigh
Fink, E. S., GP	Crossnore
Finklestein, Harold, S	Durham
Fitzgerald, C. E.	Farmville
Fitzgerald, J. D., S	Roxboro
*Fitzgerald, J. H., OALR	Smithfield
Flagge, P. W., (Hon.), GP	High Point
*Fleming, F. R., GP	Statesville
Fleming, Fred, GP	Coats
Fleming, L. E., S	Charlotte
*Fleming, M. I.	Rocky Mount
Fleming, R. G., GP	Rochester, Minn.
Fleming, W. L., Syphilology	Chapel Hill
Flemming, G. M., S	Cleveland
Fletcher, R. V., S	Durham
Flinnin, J. M., (Hon.)	Pilot Mountain

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* Present at 1940 meeting.

Name	Address
Flippin, S. T., (Hon.)	Siloam
*Flowers, C. E., GP	Zebulon
Floyd, A. G., GP	Whiteville
Floyd, L. D., GP	Fair Bluff
*Flythe, W. H., GP	Norwood
Forbus, W. D., Path	Durham
*Ford, D. E.	Washington
Formyduval, Thurston, GP	Whiteville
Forrest, D. E., GP	Hillsboro
Fortune, A. F., (Hon.), GP	Greensboro
Foster, G. G., NP	Raleigh
Foster, H. H., GP	Norlina
*Foster, J. F., GP	Sanford
*Foster, M. T., PH	Fayetteville
*Fox, N. A., GP	Greensboro
*Fox, P. G., U	Raleigh
*Fox, R. E., PH	Raleigh
*Franklin, E. W., ObG	Charlotte
Franklin, R. B. C., PH	Mt. Airy
Frazier, J. W.	Salisbury
Freeman, J. D., OALR	Wilmington
Freeman, R. H.	Raleigh
Freeman, W. T., GP	Asheville
Fresh, W. M., GP	Hickory
*Fritz, J. L.	Asheboro
Fritz, O. G., GP	Walkertown
*Fritz, W. A.	Hickory
Frizzelle, M. T., (Hon.), GP	Ayden
Frye, G. R., S	Hickory
*Fuller, H. F.	Kinston
Fulp, J. F.	Stoneville
Furman, W. H.	Henderson
Futrell, L. M.	Murfreesboro
*Gage, L. G., I	Charlotte
Gallant, R. M., Ob	Charlotte
Gambill, I. S.	Elkin
Gamble, J. F., GP	Lincolnton
Gamble, J. R., S	Lincolnton
Gambrell, G. C., PH	Lexington
*Gardner, C. E., Jr., S	Durham
Garren, R. H., (Hon.), OALR	Monroe
Garrenton, Connell, GP	Bethel
*Garrett, F. B., OALR	Rockingham
*Garrison, R. B., Pd	Hamlet
Garriss, F. H.	Lewiston
*Garvey, F. K., U	Winston-Salem
*Garvey, R. R., U	Winston-Salem
*Gaskin, J. S., GP	Albemarle
Gaskin, L. R., GP	Albemarle
*Gaskin, M. B., GP	Albemarle
Gaul, J. S., Or	Charlotte
*Gay, C. H.	Charlotte
*Geddie, K. B., Pd	High Point
Gentry, G. W.	Roxboro
Gibbon, J. W., S	Charlotte
Gibbon, R. L., (Hon.), S	Charlotte
Gibbs, E. W.	Shelby
Gibson, L. O., GP	Statesville
*Gibson, M. R., (Hon.), OALR	Raleigh
Gilbert, E. L.	Winston-Salem
Gill, J. A.	Elizabeth City
Gillespie, S. C., I	Asheville
Gilreath, F. H., (Hon.)	N. Wilkesboro
Glascock, H. W., Jr., GP	Raleigh
*Glascock, J. H., (Hon.), GP	Greensboro
Glenn, C. A., S	Gastonia
Glenn, C. F., S	Rutherfordton
*Glenn, Channing	Elizabethtown
Glenn, E. B., GP	Hiwassee Dam
Glenn, H. F., Jr., GP	Gastonia
*Glenn, L. N., (Hon.), S	Gastonia
*Godwin, G. C., Tb	Sanatorium
*Gold, Ben, Pd	Shelby
Gold, C. F.	Rutherfordton
Gold, T. B.	Shelby
*Goley, W. C.	Graham
*Goode, T. V., S	Statesville
Goodman, A. B., (Hon.)	Lenoir
Goodwin, C. W.	Wilson
*Goodwin, O. S., GP	Apex
Gorham, H. J.	Nashville
Goudelock, J. J., GP	Monroe
Goudge, M. E., GP	Durham
Gouge, A. E.	Bakersville
Gove, A. M., (Hon.), GP	Greensboro
Grady, J. C., (Hon.), GP	Kenly
Grady, W. E., (Hon.)	Tryon
Graham, Chas., S	Wilmington
*Graham, W. A., ObG	Durham
*Grantham, W. L., (Hon.), U	Asheville
*Graves, R. W., N	Durham
*Gray, C. L., Tb	Sanatorium
Grayson, C. S., (Hon.), GP	High Point
Gregg, A. D., PH	Henderson
*Green, W. W., (Hon.), S	Tarboro
*Greene, J. B., ALR	Asheville
*Greene, P. Y., PH	Burlington
Greene, W. A., GP	Whiteville
Greenwood, A. B., U	Asheville
*Griffin, H. L.	Asheboro
*Griffis, J. W.	Denton
*Griffith, F. W.	Asheville
Griffith, L. M., OALR	Asheville
Grigg, J. R., GP	Gastonia
Griggs, W. T., (Hon.), Pr	Poplar Branch
*Grimes, W. L., S	Winston-Salem
Groome, J. G.	High Point
Groves, R. B., GP	Lowell
Gwyn, H. L.	Yanceyville
*Haar, F. B., Pd	Greenville
*Hackler, R. H., R	Washington
Hagna, L. W.	Marion
Halford, J. W., (Hon.)	Lillington
*Hall, W. D.	Raleigh
*Ham, Clem, Syphilology	Monroe
Hamblen, E. C., G	Durham
*Hambrick, R. T.	Hickory
Hamer, A. W., GP	Morganton
Hamer, Douglas, Jr., U	Lenoir
*Hamer, J. B.	Charlotte
Hamer, W. A.	Charlotte
*Hamilton, J. H.	Raleigh
Hammond, A. F.	Grifton
Hamrick, John	Shelby
Hand, E. H.	Charlotte
*Hanes, F. M., I	Durham
Hansen-Pruss, O. C. E., I	Durham
*Harbison, J. W., S	Shelby
Hardee, W. P., OALR	Durham
Harden, Boyd	Graham
*Harden, Graham	Burlington
*Hardin, E. R.	Lumberton
*Hardin, P. C., S	Monroe
Hardy, I. M., (Hon.), GP	Kinston
Hare, R. B.	Wilmington
*Harmon, R. H.	Boone
*Harper, F. T., Jr., Tb	Sanatorium
*Harper, J. H., (Hon.), GP	Snow Hill
Harrell, G. T., Jr., I	Durham
Harrell, L. J.	Goldsboro
*Harrill, J. A., ALR	Winston-Salem
Harrill, L. B., (Hon.), S	Caroleen
*Harris, I. E., Jr., S	Durham
Harrison, Edmund, (Hon.)	Greensboro
*Harrison, E. T., S	High Point
Harriss, A. H., (Hon.), GP	Wilmington
*Harry, J. M., U	Fayetteville
*Hart, Deryl, S	Durham
Hart, O. J., U	Winston-Salem
Hart, V. K., ALR	Charlotte
Harton, R. A., GP	Durham
Harvey, W. W.	Greensboro
Hathcock, T. A., (Hon.), GP	Norwood
*Hawes, Aubrey	Charlotte
Hawes, C. F.	Rose Hill
Hawes, J. D., OALR	Greenville
Hays, B. K., (Hon.), T	Oxford
Haywood, H. B.	Raleigh
Head, W. T.	Campobello, S. C.
Hedgepeth, E. M.	Roxboro
Hedgpeth, E. M., I	Chapel Hill
*Hedgpeth, L. R., OALR	Lumberton
Hedgpeth, W. C., Ob	Lumberton
*Hedrick, C. R.	Lenoir
*Hege, J. R., PH	Winston-Salem
Heighway, S. C., (Hon.), GP	Murphy
*Helms, J. B.	Morganton
Helsabeck, B. A.	King
Helsabeck, C. J.	Walnut Cove
Helsabeck, R. S.	King
Henderson, C. C.	Mt. Olive
Henderson, I. C., GP	Asheville
*Henderson, J. P.	Jacksonville
Hendrix, J. P., I	Durham
Henly, R. D., GP	Winston-Salem
*Henry, H. H., PH	Gastonia
*Henry, T. B., I	Rockingham
Hensley, C. A., OALR	Asheville
Herbert, W. P., S	Asheville
Herman, C. B., GP	Statesville
Herrin, H. K.	Gastonia
*Herring, E. H.	Raleigh
*Herring, R. A., PH	High Point
*Hester, W. S.	Reidsville
Hiatt, H. B., (Hon.)	Oldsmar, Fla.
Hicks, C. S., (Hon.), GP	Durham
*Hicks, V. M., Oph	Raleigh
Higginbotham, Upshur, I	Roanoke Rapids
*Highsmith, J. F., Jr., S	Fayetteville
*Highsmith, Seavy, (Hon.)	Fayetteville
*Highsmith, W. C., I	Fayetteville
*Hightower, Felda	Raleigh
Hill, J. N., (Hon.), GP	Murphy
*Hill, M. D.	Raleigh
Hill, W. I., (Hon.), GP	Albemarle
Hinnant, Milford, GP	Micro
Hinson, Angus, GP	Statesville
*Hipp, E. R., S	Charlotte
Hipps, A. G. T.	Asheville
*Hitch, Joseph, D	Raleigh

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* Present at 1940 meeting.

Name	*Address*
*Hocutt, B. A., (Hon.), GP	Clayton
*Hodgin, II. H., (Hon.), GP	Red Springs
Hoggard, J. T., GP	Wilmington
*Holbrook, J. S., GP	Statesville
*Holladay, L. W	High Point
*Holloway, J. C., GP	Durham
Holloway, R. L., (Hon.), GP	Durham
*Hollyday, W. M., OALR	Asheville
*Holman, R. L., Path	Chapel Hill
*Holmes, A. B	Fairmont
*Holmes, G. W., Or S	Winston-Salem
*Holt, D. W., I	Greensboro
*Holt, W. P., (Hon.), S	Erwin
Hooper, J. W., S	Wilmington
Hoover, C. H., (Hon.), GP	Crouse
Hoover, W. A., S	Murphy
Horack, H. M	Durham
Horton, M. C	Raleigh
Horton, W. C., (Hon.), Pr	Raleigh
Houck, A. F., (Hon.)	Fredericksburg, Va.
Houser, E. A., (Hon.)	Shelby
*Houser, F. M	Cherryville
Houser, O. J	Charlotte
*Hovis, L. W., (Hon.), OALR	Charlotte
*Howard, C. E., R	Goldsboro
*Howell, W. L	Ellerbe
Hubbard, C. C., (Hon.)	Farmer
*Hubbard, F. C., S	N. Wilkesboro
Hudgins, H. A., GP	Winston-Salem
Hudson, C. C., PH	Greensboro
Huffines, T. R., U	Asheville
Hundley, Deane, Jr	Wallace
*Hunsucker, C. R	Hickory
Hunt, J. F	Spindale
*Hunt, J. S., Pd	Charlotte
Hunt, W. B	Lexington
Hunter, L. W	Charlotte
*Hunter, W. B	Lillington
*Hunter, W. C	Wilson
Hurdle, S. W., GP	Winston-Salem
Huston, J. W., T	Asheville
Hutchens, E. M., (Hon.), GP	N. Wilkesboro
*Hutchinson, S. S	Bladenboro
Ingersoll, L. M., Allergy	Asheville
Ingram, C. B., (Hon.)	Mt. Gilead
Irwin, Henderson	Eureka
*Ivey, H. B., R	Goldsboro
Ivey, R. R., S	Asheville
*Izlar, H. L., GP	Winston-Salem
Jackson, M. V	Princeton
Jacobs, J. E., Or S	Charlotte
*James, A. A., Jr., GP	Sanford
*James, A. W., S	Laurinburg
James, F. P., GP	Laurinburg
*James, W. D., (Hon.), S	Hamlet
Jarman, F. G., S	Roanoke Rapids
*Jennings, C. W., II	Greensboro
*Jennings, R. G.	Thomasville
Jervey, A. J., S	Tryon
John, Peter, (Hon.), GP	Laurinburg
*Johnson, A. N., GP	Garland
Johnson, C. T.	Red Springs
*Johnson, Floyd, (Hon.), PH	Whiteville
Johnson, G. F., I	Reidsville
*Johnson, G. W., ObG	Wilmington
*Johnson, H. L., S	Greensboro
Johnson, J. L	Graham
Johnson, J. R., S	Richwood, W. Va.
Johnson, J. B	Old Fort
Johnson, N. M., (Hon.), GP	Durham
*Johnson, P. W., Ob	Winston-Salem
*Johnson, T. C., (Hon.), S	Lumberton
Johnson, W. A	Reidsville
Johnson, W. C., GP	Canton
*Johnson, W. M., (Hon.), I	Winston-Salem
Johnson, W. R., I	Asheville
Johnston, Christopher, I	Durham
Johnston, J. G., OALR	Charlotte
Johnston, W. W., ObG	Manteo
*Jonas, J. F., (Hon.)	Marion
*Jones, B. N., OALR	Winston-Salem
Jones, C. C	Apex
Jones, C. P., Jr	Snow Hill
*Jones, C. S	Cliffside
Jones, Catesby, Opn	Asheville
*Jones, D. C.	Lansing
Jones, F. W., S	Newton
*Jones, O. H., Ob	Charlotte
Jones, R. D., (Hon.), S	New Bern
Jones, R. R., Jr., S	Durham
*Jones, R. R., GP	Winston-Salem
Jones, T. T., GP	Durham
*Jones, W. M., (Hon.)	Greensboro
Jones, W. S., GP	Nashville
Jones, W. M., Pd	Gastonia
Jordan, W. P., GP	Windsor
*Joyner, G. W., S	Asheboro
Joyner, P. W	Enfield
*Judd, E. C., S	Raleigh
Judd, G. B	Varina
*Judd, J. M., (Hon.)	Varina
Justa, S. H., U	Rocky Mount
Justice, G. B., (Hon.)	Marion
Justis, L. H	Littleton
Kafer, O. A	New Bern
*Kavanagh, W. P	Cooleemee
Keiger, O. R., GP	Winston-Salem
*Keiter, W. E., Pd	Kinston
*Keith, M. Y., Pd	Greensboro
Kelly, L. W., I	Charlotte
*Kemp, M. D., P	Pinebluff
*Kendall, B. H	Shelby
*Kendall, J. H	Richlands
*Kendrick, Chas.	Valdese
*Kennedy, J. P., S	Charlotte
Kennedy, L. T., PH	Winston-Salem
Kent, A. A., (Hon.)	Winter Park, Fla.
*Kent, A. A., Jr	Granite Falls
*Kerns, T. C., OALR	Durham
*Kerr, J. E., (Hon.), GP	Danbury
Kerr, J. T., GP	Wilson
Ketchie, J. M	Salisbury
Kibler, W. H., ALR	Morganton
Killian, F. M., OALR	Franklin
King, D. I. C., GP	Hendersonville
*King, E. S., Bact	Wake Forest
King, L. D	Mount Olive
*King, P. M., (Hon.)	Charlotte
King, R. M., (Hon.)	Concord
*King, R. R., PH	Boone
Kinlaw, M. C., GP	Pembroke
Kinley, J. W., P	Cuyahoga Falls, Ohio
Kinsman, H. F., (Hon.), PS	Hamlet
Kirby, G. S., (Hon.)	Marion
Kirby, W. L., R, D	Winston-Salem
Kirk, W. R., (Hon.), GP	Hendersonville
Kirkpatrick, W. L., GP	Waynesville
Kirksey, J. J., Pd	Morganton
Kitchin, T. D., (Hon.)	Wake Forest
Klenner, F. H	Reidsville
*Knight, F. L., S	Sanford
*Knight, W. P., (Hon.)	Greensboro
Knoefel, A. E., Jr., GP	Black Mountain
Knoefel, A. E., Sr., GP	Black Mountain
*Knox, J. C., PH	Raleigh
Knox, John, (Hon.), GP	Lumberton
Koonce, D. B., S	Wilmington
Koonee, S. E., (Hon.), OALR	Wilmington
*Kornegay, L. W., (Hon.), S	Rocky Mount
*Kress, E. L	Wadesboro
*Kress, J. H., S	Wadesboro
*Kutscher, G. W., Jr., Pd	Asheville
*Lackay, R. H	Fayetteville
Lackey, W. J	Fallston
Lafferty, R. H., (Hon.), R	Charlotte
Laneaster, F. J	Lexington
Lancaster, N. F., GP	Waynesville
Laneaster, W. J., S	Wilmington
*Lane, B. E., I	Raleigh
Lane, J. L., OALR	Rocky Mount
*Lanier, V. C	Welcome
*Lapsley, A. F., GP	Badin
Large, H. L	Rocky Mount
Lassiter, H. G	Weldon
Lassiter, V. C., S	Winston-Salem
Lassiter, W. H., GP	Selma
*Laton, J. F., OALR	Albemarle
Lattimore, E. B., (Hon.)	Shelby
Lawrence, B. J., S	Raleigh
Lawson, G. W	Graham
*Leath, McL. B., OALR	High Point
LeBauer, M. L., S	Greensboro
LeBauer, S. F., I	Greensboro
Ledbetter, J. McQ., (Hon.), OALR	Rockingham
Lee, A. F., ObG	Durham
*Lee, J. M., GP	Newton Grove
Lee, L. V., (Hon.)	Lattimore
*Lee, Mike, GP	Kinston
*Lee, T. L., ObG	Kinston
*Leinbach, R. F	Charlotte
Leonard, J. C., Jr	Lexington
*Lewis, S. V	Plymouth
Lewis, W. G	Stokesdale
*Liles, L. C., NP	Raleigh
Lillv, J. M., (Hon.), OALR	Fayetteville
Lindberg, O. S	Asheville
Lineberry, J. A.	Four Oaks
Linville, A. Y., (Hon.), GP	Winston-Salem
Lippert, K. M., S	Lancaster, S. C.

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* Present at 1940 meeting.

Name	*Address*
Lister, J. L., (Hon.)	Jackson
*Little, H. L.	Gibsonville
*Little, L. M., GP	Statesville
Liverman, J. S.	Winterville
Livingston, E. A., GP	Gibson
Logan, F. W. H.	Rutherfordton
*Lohr, Dermot, GP	Lexington
*London, A. H., Jr., Pd	Durham
*Long, I. C.	Goldsboro
Long, R. H., NP	Morganton
Long, T. W.	Newton
*Long, T. W. M., (Hon.), GP	Roanoke Rapids
*Long, V. McK., (Hon.), U	Winston-Salem
Long, W. M., S	Mocksville
*Long, Z. F., Pd	Rockingham
Looney, J. J. W.	Rocky Mount
Lord, M. J.	Montreat
*Lore, R. E.	Lenoir
Lott, W. C., U	Asheville
Love, B. E., (Hon.)	Roxboro
*Love, W. M., GP	Monroe
Lovelace, T. C.	Henrietta
Lovill, R. J.	Mount Airy
*Lowery, J. R.	Salisbury
Lubchenko, N. E.	Harrisburg
Lupton, C. C.	Burlington
*Lupton, E. S., Pd	Raleigh
Lutterloh, I. H., Jr., S	Sanford
Lyday, C. E.	Gastonia
*Lyday, R. O., S	Greensboro
*Lynn, C. K.	Valdese
MacConnell, J. W., (Hon.), OALR	Davidson
MacFadyen, P. R.	Concord
Mackie, G. C.	Wake Forest
MacNider, W. deB., (Hon.), U	Chapel Hill
*Macon, G. H., GP	Warrenton
MacRae, J. D., Jr., R	Asheville
Maddrey, M. C., S	Roanoke Rapids
Malloy, S. A., (Hon.), Ob	Yanceyville
*Maness, A. K., Ob	Greensboro
*Mann, I. T., G	High Point
Manning, I. H., (Hon.)	Chapel Hill
*Manning, I. H., Jr., I	Durham
Markham, Blackwell, S	Durham
Mariner, N. B., (Hon.)	Belhaven
*Marr, M. W., I	Pinehurst
*Marsh, F. B.	Salisbury
*Marshall, J. F., S	Winston-Salem
*Martin, B. F., GP	Winston-Salem
Martin, D. S., Pd, Bact	Durham
*Martin, J. A., Pd	Lumberton
*Martin, J. F., (Hon.), OALR	Dunn
Martin, J. H., GP	Red Oak
Martin, J. W., GP	Roanoke Rapids
Martin, Lester, S	Mocksville
Martin, M. S., S	Mount Airy
*Martin, W. F., S	Charlotte
Martin, W. J.	Davidson
*Massey, C. C., Pr	Charlotte
*Matheson, R. A., GP	Raeford
Mathews, R. W.	Greensboro
Mathews, V. M., Ob	Charlotte
Matros, N. H., S	Oteen
Matthews, J. O., (Hon.), GP	Clinton
*Matthews, M. L., (Hon.), OALR	Sanford
Matthews, W. C.	Davidson
Matthews, W. W.	Leaksville
Mauldin, P. R., S	Kannapolis
*Mauzy, C. H., Ob	Winston-Salem
May, W. P., GP	Winston-Salem
Mayer, W. B., D	Charlotte
McAdams, C. R.	Belmont
McAlister, Jean	Greensboro
McAlister, H. A.	Lumberton
McAlister, Russell	Williamston
McAnally, J. McG., S	Reidsville
McAnally, W. J., (Hon.)	High Point
McBane, T. W., GP	Pittsboro
McBee, Paul, S	Marion
McBryde, A. M., Pd	Durham
*McCain, P. P., Tb	Sanatorium
McCain, W. K.	High Point
*McCain, W. R., (Hon.)	High Point
McCall, A. C., OALR	Asheville
McCampbell, John, (Hon.), P	Morganton
McCants, C. H., S	Winston-Salem
McChesney, W. W., Ob	Gastonia
McClees, E. C.	Elm City
*McClelland, J. O., GP	Maxton
McCotter, St. Elmo, (Hon.)	Bayboro
McCoy, T. M., (Hon.)	Charlotte
McCracken, C. M., (Hon.)	Fairview
McCracken, J. R., (Hon.), OALR	Waynesville
McCuiston, A. M., Pr	Mount Olive
*McCutchan, Frank	Salisbury
McCutcheon, W. B., S	Durham
McDade, B. B., R	Burlington
*McDonald, A. M.	Charlotte
McDonald, L. B., GP	Hendersonville
McDonald, R. L., GP	Thomasville
McDowell, W. K.	Scotland Neck
McDuffie, J. T.	Spruce Pine
McEachern, Duncan, GP	Wilmington
*McElwee, R. S., R	Statesville
*McFadyen, O. L., I	Fayetteville
*McGeachy, R. S., (Hon.), PH	New Bern
*McGee, R. L.	Raleigh
*McGehee, J. W., (Hon.), Ob	Reidsville
McGoogan, B. J., GP	Morven
McGowan, J. C., OALR	Asheville
McGrath, F. B., GP	Lumberton
McIntosh, D. M., (Hon.)	Old Fort
*McIntosh, D. M., Jr.	Marion
McIntyre, Stephen, S, U	Lumberton
*McIver, Lynn, (Hon.), GP	Sanford
*McKay, H. W., U	Charlotte
McKay, J. F., (Hon.)	Buies Creek
*McKay, R. W., U	Charlotte
McKay, W. P., OALR	Fayetteville
*McKee, J. S., Jr.	Morganton
McKee, L. M., GP	Durham
*McKenzie, W. M., PH	Albemarle
McKnight, R. B.	Charlotte
McLaughlin, C. S., (Hon.)	Charlotte
McLaughlin, C. S., Jr.	Charlotte
McLaughlin, J. E., (Hon.)	Statesville
McLean, E. K.	Charlotte
McLelland, W. D.	Mooresville
McLemore, G. A., (Hon.), GP	Smithfield
McLeod, A. H., (Hon.)	Aberdeen
*McLeod, J. P. U.	Wingate
McLeod, N. H.	Raleigh
McLeod, V. C.	Southern Pines
McLeod, W. G.	Southern Pines
McLeod, W. L.	Norwood
McLesky, J. H.	Charlotte
*MacMillan, E. A., I, NP	Winston-Salem
*McMillan, J. M.	Candor
*McMillan, R. D., GP	Red Springs
McMillan, R. L.	Winston-Salem
*McNairy, Caroline, Ob	Lenoir
*McNeill, J. H., I	N. Wilkesboro
McPhail, L. D., (Hon.), Pr	Charlotte
*McPheeters, S. B., PH	Goldsboro
*McPherson, C. W., OALR	Burlington
McPherson, R. G.	Saxapahaw
*McPherson, S. D., (Hon.), OALR	Durham
Mears, G. A., S	Asheville
Mebane, W. C., Jr., S	Wilmington
Menzies, H. C., (Hon.)	Hickory
Meriwether, B. M.	Asheville
Merritt, J. F.	Greensboro
Merritt, J. H., (Hon.)	Woodsdale
Mewborn, J. M.	Farmville
Mickley, Jack, GP	Tabor City
*Milam, D. F., PH	Chapel Hill
Miles, M. S., (Hon.)	Greensboro
Miles, W. W., GP	Champion
*Milham, C. G., I, R	Hamlet
Millender, C. W.	Asheville
Miller, Harry, GP	Murphy
Miller, J. F., S	Marion
Miller, L. B.	Raleigh
Miller, O. L., Or	Charlotte
Miller, R. C.	Gastonia
Miller, R. B., (Hon.), Pd	Goldsboro
*Miller, W. E., S	Whiteville
*Milliken, J. S.	Southern Pines
Mills, C. R.	Greensboro
Mitchell, G. T., GP	Wilkesboro
*Mitchell, G. W.	Wilson
Mitchell, P. H., (Hon.)	Ahoskie
*Mitchell, R. C., I	Mt. Airy
Mitchell, R. H.	Gastonia
Mitchell, T. B.	Shelby
*Mitchell, Z. P.	Shelby
Mitchener, J. S., OARL	Raleigh
*Mock, C. G.	Salisbury
*Mock, F. L., (Hon.)	Lexington
Monk, H. L., (Hon.)	Salisbury
*Monroe, C. R., S	Pinehurst
Monroe, L. T.	Kannapolis
Montgomery, H. M., (Hon.)	Burlington
Montgomery, J. C., Anes	Charlotte
Moore, A. W.	Charlotte
Moore, B. D.	Mt. Holly
Moore, C. E., (Hon.)	Wilson
Moore, D. B., S	Badin

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* Present at 1940 meeting.

Name	Address
Moore, D. F., ObG	Shelby
Moore, D. L.	Falkland
Moore, E. V.	Earl
*Moore, H. B.	Graham
Moore, J. A.. S	Asheville
Moore, K. C.	Newton Grove
*Moore, Oren	Charlotte
Moore, R. A., Or	Charlotte
*Moore, R. A., Or	Winston-Salem
Moore, R. H., GP	Canton
Moore, W. H., ObG	Wilmington
*Morehead, R. P.	Wake Forest
Morgan, B. E., GP	Asheville
Morgan, G. A.	Asheville
Morgan, W. G.	Chapel Hill
Morris, J. W., S	N. Wilkesboro
Morris, J. A., (Hon.)	Oxford
Morris, R. H.	Concord
Morrison, H. K.	Sherburne, La.
Morrow, W. C., GP	Andrews
Moseley, C. W., (Hon.), I	Greensboro
*Moseley, Z. V., PH	Kinston
Moss, G. O.	Cliffside
Motley, F. E., ALR	Charlotte
Mudgett, W. C., (Hon.), I	Southern Pines
*Munroe, H. S., (Hon.), S	Charlotte
*Munroe, H. S., Jr., S	Charlotte
Munroe, J. P., (Hon.), I	Charlotte
Munt, H. F.	Winston-Salem
Murchison, D. R., GP	Wilmington
*Murphy, G. W., R	Asheville
*Murray, R. L., GP	Raeford
Myers, Alonzo, Or	Charlotte
Myers, D. L.	Harmony
Myers, H. T.	Lexington
*Myers, J. Q., (Hon.)	Charlotte
*Nalle, B. C., (Hon.), ObG	Charlotte
Nance, C. L.	Charlotte
*Nash, J. F.	St. Pauls
Naumoff, Philip	Charlotte
Neal, J. W., (Hon.), GP	Monroe
Neal, K. P., S	Raleigh
*Neal, P. W., Ob	Raleigh
Neblett, H. C., Oph	Charlotte
*Neese, K. E., GP	Monroe
Nelson, R. J., (Hon.)	Robersonville
Nelson, W. H., GP	Clinton
Neville, C. H.	Scotland Neck
Newcomb, A. P.. Jr.	Henderson
*Newell, H. A., (Hon.), OALR	Henderson
Newell, L. B.. (Hon.)	Charlotte
Newman, H. H., S	Salisbury
Newton, H. L.	Charlotte
Newton, W. K., OALR	N. Wilkesboro
Nichols, A. A., (Hon.)	Sylva
Nichols, A. F., (Hon.)	Roxboro
*Nichols, R. E., Jr., GP	Durham
Nichols, R. E., Sr., (Hon.), GP	Durham
Nicholson, B. M.	Enfield
Nicholson, N. G., Jr.	Rockingham
Nicholson, P. A., (Hon.), Ob	Washington
Nicholson, W. M., I	Durham
Nisbet, D. H.	Charlotte
*Noble, R. P., (Hon.), R	Raleigh
*Nobles, J. E., (Hon.)	Greenville
Noblin, R. L.	Oxford
*Noell, R. H., GP	Rocky Mount
Norburn, C. S., S	Asheville
*Norburn, R. L., S	Asheville
Norfleet, A. C.	Tarboro
Norfleet, E. P., Pd	Roxobel
Norman, D. F.	Gastonia
Norman, J. S., OALR	Gastonia
*Norment, R. L.	Lumberton
Norment, W. B., S	Greensboro
Norris, Henry, (Hon.)	Waverly Mills, S. C.
*Northington, J. M., (Hon.), I	Charlotte
*Norton, Roy, PH	Chapel Hill
*Norwood, Ballard, PH	Oxford
*Nowell, S. C.	Hickory
Nowlin, Preston, S	Charlotte
Oates, George, (Hon.)	Grover
*O'Dell, J. W.	Dunn
*Oehlbeck, L. W., R	Kinston
*Offutt, V. D.	Kinston
*Ogburn, H. H., S	Greensboro
*Ogburn, L. C., Ob	Winston-Salem
*Oliver, A. S., Ob	Raleigh
Orgain, E. S., I	Durham
Ormand, J. W., GP	Monroe
*Ormond, A. L., Tb	Black Mountain
Orr, C. C., (Hon.), I	Asheville
Orr, P. B., (Hon.)	Asheville
*Osborne, G. H., GP	Waynesville
Osborne, J. E., S	Rosman
Outlaw, J. K., OALR	Albemarle
*Overcash, W. E., T	Southern Pines
Owen, C. F., Jr., GP	Canton
*Owen, J. F., NP	Raleigh
Owen, M. L., GP	Canton
Owen, R. H., GP	Canton
*Owens, F. L.	Pinehurst
Owens, Z. D.	Elizabeth City
Ownbey, A. D.	Greensboro
*Pace, K. B., GP	Greenville
Paddison, J. R., (Hon.), GP	Kernersville
Padgett, C. K.	Shelby
Padgett, P. C., GP	Kings Mountain
Palmer, Horace, GP	Littleton
Palmer, M. C.	Tryon
Palmer, Y. S., GP	Valdese
Parker, G. E., (Hon.), GP	Benson
*Parker, G. F., S	Asheville
Parker, H. R., GP	Greensboro
*Parker, O. L., OALR	Clinton
Parker, P. G.	Erwin
Parker, S. F.	Shelby
Parker, W. R.	Jackson
Parker, W. T., S	Fayetteville
Parks, Hugh, I	Elkin
*Parks, L. L., PH	Jacksonville, Fla.
Parks, W. C., Jr.	High Point
Parrott, M. C., S	Kinston
*Parrott, W. T., (Hon.), GP	Kinston
Parsons, W. H., GP	Ellerbe
*Pate, J. F., GP	Canton
*Pate, J. G., GP	Gibson
Patrick, G. R., Jr.	Bessemer City
Patterson, F. G., GP	Chapel Hill
*Patterson, F. M., U	Greensboro
Patterson, J. F., (Hon.), GP	New Bern
Patterson, J. H.	Broadway
Patton, W. H., Jr.. GP	Morganton
Pay, W. C.	Hendersonville
*Pearse, R. L., ObG	Durham
Pearson, A. A.	Fletcher
*Pearson, H. O., GP	Pinetops
*Peasley, E. D., Path	Raleigh
*Peeler, C. N., (Hon.), ALR	Charlotte
Peeler, J. M., (Hon.)	Salisbury
Peery, V. P., OALR	Kinston
*Peete, C. H., (Hon.)	Warrenton
*Pepper, J. K., (Hon.) R	Winston-Salem
*Perry, D. R., GP	Durham
Perry, E. M., GP	Rocky Mount
*Perry, G. G., GP	High Point
Perry, H. B., GP	Boone
Person, E. C., (Hon.), OALR	Pikeville
Persons, E. L., I	Durham
Peters, A. R.	Washington
Peters, W. A., S	Elizabeth City
Peterson, C. A., (Hon.)	Spruce Pine
Petteway, G. H.	Charlotte
Pfohl, S. F., (Hon.), GP	Winston-Salem
Phifer, E. W., (Hon.), GP	Morganton
Philips, C. H.	Thomasville
*Phillips, E. N., GP	N. Wilkesboro
Pickett, J. A., (Hon.)	Burlington
Pipes, D. M.	Greensboro
Pittman, E. E.	Oak City
*Pittman, M. A., S	Wilson
*Pittman, R. L.	Fayetteville
Pittman, W. A., U	Fayetteville
*Plummer, D. E., PH	Durham
Pollock, David, GP	Halifax
Pollock, Raymond, (Hon.)	New Bern
*Pool, B. B., GP	Winston-Salem
*Poole, C. G.	Winston-Salem
Post, J. J., GP	Greensboro
*Powell, A. H., GP	Durham
Powell, E. C., Jr.	Rocky Mount
Powell, H. S., GP	Gastonia
Powell, J. A., (Hon.)	Edenton
*Powers, F. P., ALR	Raleigh
Prefontaine, J. E., OALR	Greensboro
Pressley, J. L., GP	Statesville
Pressly, G. W., (Hon.), S	Charlotte
Pressly, J. M.	Belmont
*Preston, J. Z.	Tryon
Price, H. H.	Draper
Pritchard, G. L., GP	Black Mountain
Pritchard, R. W.	Kinston
*Procter, I. M., ObG	Raleigh
Pugh, C. H.	Gastonia
Purdy, J. J.	Oriental
Putney, R. H.	Elm City
*Query, R. Z., Jr.	Charlotte
Quickel, J. C., OALR	Gastonia
Raby, J. G., GP	Tarboro
Rainey, W. T., I	Fayetteville
Ramsaur, J. T., GP	Cherryville
Ramseur, W. L.	Kings Mountain
Ramsey, J. G., S	Washington
*Rand, C. H., Ob	Fremont
Rand, E. G.	Raleigh
Raney, R. B., Or	Durham

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* Present at 1940 meeting.

Name	*Address*
*Rankin, S. W., OALR	Winston-Salem
*Rankin, W. S., (Hon.), PH	Charlotte
*Ranson, J. L., Anes	Charlotte
*Ravenel, S. F., Pd	Greensboro
Ray, F. L., U	Charlotte
*Ray, J. B., (Hon.)	Leaksville
Ray, J. C	Whitakers
Ray, O. L., (Hon.)	Raleigh
Ray, S. P	Leaksville
Ray, W. T	Charlotte
Reaves, W. P., (Hon.), OALR	Greensboro
Redding, A. H., (Hon.)	Cedar Falls
Redwine, J. D	Lexington
Reed, D. H., (Hon.), GP	Wagram
*Reeves, G. F	East Bend
*Reeves, J. L., GP	Canton
Reeves, R. J., GP	Leicester
*Reeves, R. J., R	Durham
*Register, J. F., Or	Greensboro
*Reid, C. G	Charlotte
Reid, G. P., (Hon.)	Forest City
Reid, J. W., (Hon.)	Lowell
Reitzel, C. E., (Hon.)	High Point
*Reynolds, C. V., (Hon.), PH	Raleigh
Reynolds, E. H	Mayodan
Rhodes, J. S., (Hon.)	Williamston
*Rhodes, J. S., U	Raleigh
*Rhudy, B. E., R	Greensboro
*Rhvne, R. E., (Hon.), PH	Gastonia
Rhyne, S. A., GP	Statesville
*Richardson, F. H., P	Black Mountain
*Richardson, W. P., PH	Chapel Hill
Ricks, L. E., (Hon.), GP	Fairmont
Riddle, J. B., (Hon.)	Morganton
*Riggsbee, A. E., GP	Durham
*Ringer, P. H., (Hon.), T	Asheville
*Ritchie, R. F., P	Raleigh
Roberson, E. L	Tarboro
*Roberson, Foy, S	Durham
Roberson, R. S., GP	Waynesville
Roberts, B. N., GP	Hillsboro
*Roberts, B. W., Pd	Durham
Roberts, L. C., U	Durham
Roberts, R. F., GP	Asheville
Roberts, W. M., Or	Gastonia
Robertson, C. B	Jackson
Robertson, E. M., S	Durham
*Robertson, J. F., S	Wilmington
Robertson, J. M., GP	Harmony
Robertson, J. N., OALR	Fayetteville
*Robertson, L. H	Salisbury
*Robinson, C. W	Charlotte
Robinson, D. E., Pd	Burlington
Robinson, J. D	Wallace
Robinson, J. L., S	Gastonia
Rodman, J. C., (Hon.), U	Washington
Rodman, R. B., Allergy	Wilmington
Rogers, W. A., (Hon.)	Franklin
Rollins, C. D	Henderson
*Rollins, V. B	Henderson
*Root, A. S., Pd	Raleigh
Rose, A. H., (Hon.), GP	Smithfield
*Rose, D. J	Goldsboro
Rose, J. W., GP	Pikeville
*Rosenau, M. J., PH	Chapel Hill
Rosenbaum, M. M., S	Shallote
*Ross, G. H., (Hon.), GP	Durham
Ross, O. B	Charlotte
*Ross, R. A., ObG	Durham
Ross, T. W	Charlotte
*Rosser, R. G., Pd	Vass
*Rousseau, J. P., R	Winston-Salem
*Royal, B. F., S	Morehead City
Royal, D. M., GP	Salemburg
Royall, M. A., (Hon.), OALR	Elkin
*Royster, H. A., (Hon.), S	Raleigh
Royster, S. S., (Hon.)	Shelby
Royster, T. H., OALR	Tarboro
Ruark, R. J., ObG	Raleigh
Rucker, A. A., (Hon.)	Rutherfordton
Rudisill, J. D., S	Lenoir
Ruffin, J. M., I	Durham
Russell, C. R	Granite Falls
Russell, J. M., GP	Canton
Russell, W. M., OALR	Asheville
*Sabiston, Frank, OALR	Kinston
Sader, Julius, GP	Bailey
*Sadler, R. C., GP	Whiteville
Saliba, M. M., Oph	Wilson
Salley, E. McQ., (Hon.), GP	Hendersonville
Salmons, H. C., (Hon.)	Elkin
Salters, Fred, ORAL	Fayetteville
Sanger, P. W	Charlotte
Saunders, J. H., (Hon.)	Williamston
Saunders, J. R	Morganton
*Saunders, J. T., Or	Asheville
*Saunders, S. A	Aulander
Saunders, S. S., Pd	High Point
Sawyer, C. J., (Hon.), OALR	Windsor
*Sawyer, W. W., (Hon.), OALR	Elizabeth City
Schaffle, Karl, T	Asheville
Schenk, S. M., S	Shelby
Schallert, P. O	Winston-Salem
*Schiebel, H. M., S	Durham
*Schoenheit, E. W., I	Asheville
*Schoonover, R. A	Greensboro
Schuler, J. E., GP	Durham
Scott, R. C	Asheville
Scott, S. F	Union Ridge
Scruggs, W. M., S	Charlotte
*Seay, H. L., T	Huntersville
*Seav, T. W	Salisbury
*Shelby, W. E., NP	Charlotte
Sevier, J. T., (Hon.)	Asheville
Sessoms, E. T., GP	Roseboro
*Shafer, I. E., Ob	Salisbury
*Sharpe, C. R	Lexington
*Sharpe, F. L., (Hon.)	Statesville
Shaver, W. T., S	Albemarle
*Shaw, J. A., Pd	Fayetteville
Shaw, L. R., GP	Statesville
*Shelburne, P. A	Greensboro
*Sherrill, H. R	Shelby
Sherrill, P. M	Thomasville
Shinn, G. C	China Grove
Shipp, G. W	Newton
Shirley, H. C., ALR	Charlotte
Shohan, Joseph, R	Greensboro
Shuford, M. F	Asheville
*Shull, J. R., R	Charlotte
*Sidbury, J. B., Pd	Wilmington
*Sigman, F. G	Spencer
*Sikes, C. H	Greensboro
Sikes, G. L., (Hon.), GP	Salemburg
Simmons, R. R., U	Winston-Salem
Simons, C. E	Wilson
*Simpson, H. H	Elon
*Sinclair, L. G., S	Raleigh
*Sinclair, R. T	Whiteville
Singletary, G. C	Clarkton
Sink, C. S., GP	N. Wilkesboro
*Sink, V. R., OALR	Winston-Salem
*Sisk, C. N., PH	Waynesville
Siske, G. C	Pleasant Garden
*Skeen, L. B	Sanatorium
Skinner, L. C., (Hon.)	Greenville
Slate, J. E	High Point
*Slate, J. S., (Hon.), GP	Winston-Salem
*Slate, J. W	High Point
*Slate, M. L	High Point
Slate, W. C., (Hon.)	Spencer
Sloan, A. B., GP	Mooresville
Sloan, D. B., OALR	Wilmington
*Sloan, H. L., Oph	Charlotte
Sloan, W. H., GP	Garland
Sloan, W. S., I	Wilson
Sloop, E. H., (Hon.)	Crossnore
Small, V. R., GP	Clinton
Smith, A. J	Black Creek
Smith, A. T., GP	Greensboro
Smith, A. T., G	Durham
Smith, B. R., I	Asheville
Smith, C. T., I	Rocky Mount
Smith, D. L., Pd	Saluda
Smith, D. T., I	Durham
*Smith, D. W., GP	Waynesville
Smith, F. C., Oph	Charlotte
Smith, F. L	Burlington
Smith, G. M., GP	Monroe
Smith, H. B., GP	N. Wilkesboro
*Smith, J. A., S	Lexington
*Smith, J. E	Windsor
Smith, J. G., I	Rocky Mount
*Smith, J. McN., (Hon.), GP	Rowland
Smith, M. B	Ramseur
Smith, O. F., (Hon.)	Scotland Neck
*Smith, O. N	Greensboro
*Smith, Sidney, U	Raleigh
*Smith, S. A., OALR	Whiteville
Smith, T. A	Charlotte
Smith, W. C	Goldsboro
Smith, W. F., (Hon.), GP	Chadbourne
*Smith, W. G., S	Thomasville
*Smith, W. H	Goldsboro
Smoot J. E., (Hon.)	Concord
*Soady, J. H	Asheboro
*Sorrell, F. Y., GP	Wadesboro
Sox, C. C., GP	Kenly
*Spainhour, E. H., (Hon.), GP	Winston-Salem
*Sparrow, T. D., S	Charlotte
Speas, D. C., GP	Winston-Salem
Speas, W. P., Oph	Winston-Salem
Speed, J. A., GP	Durham
Speight, J. A., GP	Rocky Mount
Spencer, F. B	Salisbury

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* Present at 1940 meeting.

Name	*Address*
*Spicer, R. W.	Winston-Salem
*Spikes, N. O., GP	Durham
*Spoon, S. C.	Burlington
Sprinkle, C. N., GP	Weaverville
Sprunt, D. H., Path	Durham
*Sprunt, W. H., Jr., S	Winston-Salem
*Squires, C. B., U	Charlotte
Staley, S. W., (Hon.), GP	Rocky Mount
Stanfield, W. W	Dunn
*Stanford, L. F., GP	Durham
*Stanford, W. R., I	Durham
Stanley, J. H., (Hon.), GP	Four Oaks
Stanton, D. A., (Hon.)	High Point
*Starling, H. M., S	Winston-Salem
*Starling, W. P., GP	Roseboro
*Starr, H. F.	Greensboro
Stenhouse, H. M., Oph	Goldsboro
Stephenson, A. L., GP	Winston-Salem
Stephenson, B. E., GP	Roanoke Rapids
*Stevens, H. W., PH	Wilmington
Stevick, C. P.	Southport
Stewart, D. M.	Hickory
Stimpson, R. T., PH	Raleigh
*Stone, G. E.	King
Stone, M. L., GP	Rocky Mount
Stone, R. E.	Chapel Hill
Straughan, J. W.	Warsaw
*Street, C. A., Pd	Winston-Salem
*Street, M. E., Hon.), T	Glendon
Stretcher, R. H., GP	Waynesville
Strickland, A. T.	Wilson
Strickland, E. F., (Hon.), GP	Winston-Salem
*Strickland, E. L., Pd	Wilson
Strickland, H. G.	Greensboro
*Strickland, W. M.	Wendell
*Stringfield, S. L., (Hon.), GP	Waynesville
Stringfield, Thomas, (Hon.) GP	Waynesville
Stringfield, Thomas Jr., GP	Waynesville
*Strosnider, C. F.	Goldsboro
*Stroupe, A. U., Jr.	Mt. Holly
Strowd, W. A., GP	Durham
*Suiter, W. G.	Weldon
Suitt, R. B., P	Asheville
Sullivan, D. J., PN	Asheville
Sullivan, J. T., GP	Asheville
Summerlin, Harry, GP	Laurinburg
Summers, T. O.	Raleigh
Summerville, W. M., GP	Charlotte
*Sumner, E. A., S	High Point
*Sumner, G. H.	Asheboro
Sutton, C. W., (Hon.)	Richlands
Sutton, W. G., (Hon.)	Seven Springs
Swann, C. C., OALR	Asheville
Swann, J. F., (Hon.), GP	Kannapolis
*Sweaney, H. M., S	Durham
Swindell, L. H.	Washington
Sykes, C. L., GP	Pilot Mountain
Sykes, J. V.	Rocky Mount
*Sykes, R. P.	Asheboro
*Symington, John, PH	Carthage
Talley, J. S., GP	Troutman
Tally, B. T., GP	Albemarle
*Tankersley, J. W., (Hon.), S	Greensboro
Tannenbaum, A. J.	Greensboro
Tate, W. C., S	Banner Elk
*Tatum, R. C.	Fort Bragg
*Tayloe, J. C., Ob	Washington
Tayloe, Joshua, II, S	Washington
*Taylor, A. D.	Charlotte
*Taylor, C. W.	Kings Park, N. Y.
*Taylor, E. H. E., P	Morganton
*Taylor, F. R., I	High Point
Taylor, F. V., OALR	Murphy
Taylor, G. W., (Hon.) S	Mooresville
Taylor, H. C.	Charlotte
Taylor, J. N., (Hon.)	Greensboro
*Taylor, J. T., I	Greensboro
*Taylor, R. W.	Oxford
Taylor, S. R., OALR	Greensboro
*Taylor, T. J.	Roanoke Rapids
Taylor, W. I., (Hon.), GP	Burgaw
*Taylor, Wesley, NP	Greensboro
Taylor, W. L., (Hon.)	Oxford
*Teasdale, L. R.	Charlotte
*Temple, R. H., I	Kinston
Temple, Wade	Lake View, S. C.
Templeton, J. Y., GP	Mooresville
Tennent, G. S., (Hon.), Oph	Asheville
*Terry, J. R., Pd	Lexington
*Terry, W. C., GP	Hamlet
Thaxton, B. A.	Roxboro
Thelen, Christine	Greensboro
Thigpen, H. G.	Scotland Neck
*Thomas, C. D., Tb	Sanatorium
*Thomas, J. G.	Greensboro
Thomas, W. C., GP	Siler City
*Thomas, W. L., ObG	Durham
Thomas, W. N., S	Oxford
Thompson, A. F., (Hon.)	Troy
Thompson, C. D., (Hon.), U	High Point
*Thompson, E. S., I	Winston-Salem
*Thompson, H. A., Or	Raleigh
*Thompson, H. C.	Shelby
Thompson, J. W.	Creedmoor
*Thompson, S. R., U	Charlotte
*Thorpe, A. T.	Rocky Mount
Thurston, Asa, GP	Taylorsville
Todd, L. C., GP	Charlotte
Townsend, M. L.	Society Hill, S. C.
Townsend, R. G., GP	St. Pauls
Troutman, B. S.	Lenoir
*Troxler, R. M.	Burlington
Tucker, E. V.	Grifton
Turner, H. G., S	Raleigh
Turrentine, K. P., I	Kinston
Tuttle, A. F., (Hon.)	Spray
Tuttle, M. S., GP	Kannapolis
*Tuttle, R. G.	Winston-Salem
Tydeman, F. W. L.	San Francisco, Cal.
Tyler, E. R., D	Durham
*Tyndall, R. G., S	Kinston
*Tyner, C. V., S	Leaksville
Tyson, T. D., Pr	Mebane
*Tyson, T. D., Jr., ObG	High Point
*Tyson, W. W.	Mebane
*Umphlet, T. L., I	Raleigh
Underwood, M. K.	Belhaven
Upchurch, R. T.	Henderson
*Upchurch, T. G., GP	Smithfield
Utley, H. H., (Hon.), GP	Benson
*Valk, A. deT., S	Winston-Salem
*Vann, H. M.	Wake Forest
Vann, J. R., GP	Spring Hope
Vaughan, R. H., GP	Edenton
*Vaughan, W. W., R	Durham
Verdery, W. C., Pd	Fayetteville
Vermilya, G. D.	Hickory
*Vernon, J. W., P	Morganton
*Vestal, W. J., (Hon.), Pd	Lexington
Vick, G. D., (Hon.), GP	Selma
Wadsworth, H. B.	New Bern
Walker, E. T.	Williamston
*Walker, H. D., (Hon.)	Elizabeth City
Walker, J. B.	Burlington
Walker, R. J., Jr., GP	Snow Hill
Wall, R. I., OALR	Raleigh
Wall, R. L., Anes	Winston-Salem
Wall, W. S., GP	Rocky Mount
Wallace, W. S., R	Durham
*Wallin, L., PH	Wadesboro
*Walters, C. M., (Hon.)	Burlington
*Walton, C. L., Ob	Glen Alpine
Wannamaker, E. J., Jr., I	Charlotte
Ward, J. E., (Hon.), GP	Robersonville
*Ward, J. LaB., P	Asheville
Ward, N. E., G	Greenville
Ward, V. A.	Robersonville
*Ward, W. T.	Raleigh
Warfield, M. C., Pd	Blowing Rock
Warren, R. F.	Prospect Hill
Warrick, L. A.	Goldsboro
Warwick, H. C.	Greensboro
*Washburn, B. E., PH	Rutherfordton
*Washburn, C. Y., GP	Mooresboro
Washburn, J. M.	Lake Lure
*Watkins, F. B., (Hon.), P	Morganton
*Watkins, G. T., Jr., GP	Durham
*Watkins, W. M., GP	Durham
*Watson, T. M., Pd	Greenville
Way, S. E., S	Rocky Mount
Weathers, Bahnson, S	Roanoke Rapids
*Weathers, R. R.	Knightdale
Weaver, W. J., (Hon.), Pr	Asheville
Webb, B. G., (Hon.)	Andrews
Webb, W. P., (Hon.), GP	Rockingham
Weinstein, M. H., GP	Fairmont
Weinstein, R. L., GP	Fairmont
Weinzenblatt, Sprinza, Oph	Asheville
*Welton, D. G.	Charlotte
Wessell, J. C., (Hon.), GP	Wilmington
West, B. C., Pd	Kinston
West, C. F., GP	Kinston
West, L. N., OALR	Raleigh
West, R. M., (Hon.)	Salisbury
Westcott, W. E., S	Candler
Westmoreland, J. R., GP	Canton
Whaley, J. D., U	Hickory
*Wharton, Watson, GP	Smithfield
Wheeler, J. H.	Henderson
Whelpley, F. L., P	Goldsboro

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* Present at 1940 meeting.

Name	*Address*
Whichard, M. P., PH	Murphy
*Whims, H. C., PH	Rutherfordton
Whisnant, A. M., (Hon.), OALR	Charlotte
*Whitaker, J. A.	Rocky Mount
*Wbitaker, P. F.	Kinston
*Whitaker, R. B., GP	Whiteville
Whitaker, R. H., GP	Kernersville
*White, Eustace	Kannapolis
White, F. W. M.	Halifax
*White, R. A., Ob	Asheville
White, T. P., I	Charlotte
White, W. H. C., S	Elizabeth City
*Whitehead, S. L., D	Asheville
Whitfield, B. W., GP	Murphy
*Whittington, C. T., S	Greensboro
*Whittington, J. B., S	Winston-Salem
Whittington, W. W., (Hon.), GP	Snow Hill
*Wilcox, J. W., (Hon.), T	West End
*Wilkerson, A. L.	Raleigh
*Wilkerson, C. B., (Hon.), S	Raleigh
*Wilkes, M. B., GP	Laurinburg
*Wilkins, J. C.	Haw River
Wilkins, J. W.	Mount Olive
*Wilkins, R. B., OALR	Durham
Wilkins, S. A., (Hon.)	Dallas
*Wilkinson, C. T.	Wake Forest
Wilkinson, R. W., Jr.	Wake Forest
Williams, A. F., (Hon.)	Wilson
*Williams, C. F., Pd	Raleigh
Williams, J. D., (Hon.)	Guilford Station
Williams, J. D., Jr.	Stokesdale
*Williams, J. H., PH	Clinton
*Williams, J. W., PH	Williamston
Williams, W. N., GP	Tabor City
*Williamson, R. H.	Tabor City
Willis, A. P., (Hon.)	Candler
Willis, B. C., S	Rocky Mount
Willis, C. A.	Candler
Wilson, Frank, Jr., S	Raleigh
*Wilson, F. E., PH	Tarboro
Wilson, N. G.	Madison
Wilson, R. B.	Asheville
Wilson, S. A.	Lincolnton
Wilson, W. G., GP	Smithfield
*Winkler, Harry, Or	Charlotte
Winstead, E. G.	Belhaven
Winstead, J. L., S	Greenville
*Winston, P. H.	Clarksville, Va.
Wisely, M. R.	Edenton
Wiseman, P. H.	Avondale
Wisehart, W. E.	Charlotte
*Wolfe, H. C., OALR	Greensboro
*Wolff, D. R., S	Greensboro
*Wood, Frank, S	Marion
*Wood, G. T., S	High Point
Wood, Martha	Marion
Woodard, A. G., (Hon.), OALR	Goldsboro
Woodard, B. L., GP	Kenly
*Woodard, C. A., (Hon.), S	Wilson
*Woodhall, Barnes, Neuro-S	Durham
Woodson, C. W., (Hon.)	Salisbury
Woody, Austin, GP	Tryon
Wooten, F. P.	Kinston
Worley, J. H.	Asheville
*Wrenn, Creighton, GP	Mooresville
Wrenn, G. C., GP	Siler City
Wright, J. B., (Hon.), ALR	Raleigh
Wright, J. E., GP	Macclesfield
*Wright, O. E.	Winston-Salem
Wyatt, A. T.	Lillington
Wyatt, Wortham, D	Winston-Salem
*Wylie, W. deK., I	Winston-Salem
*Yoder, P. A., Tb	Winston-Salem
York, A. A., (Hon.)	High Point
Young, G. McD.	Postell
Young, J. C., U	Asheville
*Young, R. F., PH	Weldon
Yow, I. A.	Concord
Zealy, A. H., Jr.	Goldsboro
*Zimmerman, R. U., (Hon.)	Welcome

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* Present at 1940 meeting.

ROSTER OF FELLOWS FOR 1940

By Counties

NOTE. Every physician in the state whose name we could not secure has had an opportunity to supply correct information as to his name, postoffice, academic and medical education, date of State license and date State Society was joined. A few did not take advantage of this opportunity. Anyone finding an error should report it to the Secretary of the Society.

ALAMANCE-CASWELL COUNTIES SOCIETY

Name and Address	*Licensed*	*Joined State Society*
President: Robinson, D. E., Burlington: Harvard, 1927	1929	1930
Secretary: Walker, J. B., Burlington; Med. Coll. of Va., 1914. U.N.C.	1914	1916
Anderson, Charles Alexander, Burlington, (Hon.); Coll. P. & S., Balt., 1893	1893	1896
Bell, F. O., Burlington; Atlanta Med. Coll., 1918	1921	1928
Brooks, R. E., Burlington; Jeff. Med. Coll., 1920; U.N.C.	1920	1922
Carlyle, J. B., Burlington; Jeff. Med. Coll., 1926; U.N.C.	1926	1928
Carrington, Geo. L., Burlington; Johns Hopkins, 1920; U.N.C.	1920	1925
Cook, W. E., Mebane; Wash. Univ., 1930; U.N.C.	1930	1934
Denholm, J. S., Burlington; Duke, 1935	1937	1938
Ellington, A. J., Burlington; Columbia Univ., 1915; Wake Forest	1915	1917
Goley, Willard Coe, Graham; Univ. of Pa., 1924; U.N.C.	1924	1926
Greene, Phares Yates, Burlington; Northwestern Univ., 1932; Wake Forest	1932	1934
Gwyn, H. L., Yanceyville; Med. Coll. of Va., 1923	1923	1925
Harden, Boyd, Graham; Univ. of Pa., 1928	1931	1931
Harden, Graham, Burlington; Univ. of Pa., 1919	1920	1922
Johnson, Joseph L., Graham; Jeff. Med. Coll., 1926	1926	1930
Lawson, George William, Graham; Long Island Coll. of Med., 1935	1935	1938
Lupton, C. C., Burlington; Temple Univ., 1931; U.N.C.	1931	1934
Malloy, S. A., Yanceyville (Hon.); Ky. School of Med., 1897	1898	1903
McDade, B. B., Burlington; Univ. of Md., 1918; U.N.C.	1918	1920
McPherson, C. W., Burlington; Univ. of Md., 1910; U.N.C.	1910	1912
McPherson, R. G., Saxapahaw; Univ. of Md., 1910; U.N.C.	1908	1909
Montgomery, Harry M., Burlington (Hon.); N. C. Med. Coll., 1903	1903	1904
Moore, Henry Blanchard, Graham; Jeff. Med. Coll., 1920; Wake Forest	1920	1923
Pickett, John A., Burlington (Hon.); Univ. of Tenn. Coll. of Med., 1894	1894	1904
Scott, S. F., Union Ridge; Univ. of Pa., 1918; U.N.C.	1918	1920
Simpson, H. H., Elon; Univ. of Md., 1925	1925	1926
Smith, Fitzhugh Lee, Burlington; Univ. of Pittsburgh, 1927	1927	1928

Name and Address	*Licensed*	*Joined State Society*
Spoon, S. C., Burlington; Univ. of Md., 1918; U.N.C.	1918	1920
Troxler, R. M., Burlington; Univ. of Md., 1914	1914	1915
Tyson, T. D., Mebane (Hon.); Univ. Coll. of Med., Va., 1899	1899	1904
Tyson, Woodrow W., Mebane; Med. Coll. of Va., 1935	1935	1938
Walters, Charles Manley, Burlington (Hon.); Univ. of Md. and Coll. of P. & S., Balt., 1908; U.N.C.	1908	1909
Warren, R. F., Prospect Hill: Atlanta School of Med., 1911	1911	1920
Wilkins, J. C., Haw River; Univ. of Md., 1911; U.N.C.	1911	1920

ALEXANDER—SEE IREDELL-ALEXANDER

ALLEGHANY—SEE WILKES-ALLEGHANY

ANSON COUNTY SOCIETY

President: Sorrell, F. Y., Wadesboro; Jeff. Med. Coll., 1930; Wake Forest	1930	1933
Secretary: Kress, J. H., Wadesboro; Med. Coll. of Va., 1936	1938	1939
Allen, Chas. I., Wadesboro; Columbia Univ.; Coll. of P. & S., 1913; Wake Forest	1913	1922
Bennett, Jos. H., Wadesboro (Hon.); Univ. of Md., 1894	1894	1904
Carter, W. D., Wadesboro; S. C. Med. Coll., 1934	1935	1936
Covington, J. M., Wadesboro; Medico Chirurgical Coll., Phila., 1899	1899	1904
Davis, J. M., Wadesboro; Columbia Univ., 1913; Wake Forest	1913	1920
Kress, Esta L., Wadesboro; Med. Coll. of Va., 1935	1938	1939
McGoogan, Benj. J., Morven; Univ. of Md., 1912; U.N.C.	1912	1923
Wallin, L., Wadesboro; Univ. of Tenn. Med. Coll., 1909	1909	1938

ASHE—SEE WATAUGA-ASHE

AVERY COUNTY SOCIETY

President: Fink, Emma S., Crossnore; Vanderbilt, 1936	1938	1938
Secretary: Brown, J. A., Banner Elk; Tulane, 1934	1934	1938
Burleson, W. B., Plumtree; Univ. of Md., 1915; U.N.C.	1915	1916
Sloop, Eustace H., Crossnore (Hon.); N. C. Med. Coll., 1905; Jeff. Med. Coll., 1908	1905	1907
Tate, W. C., Banner Elk; Tenn. Med. Coll., 1908	1909	1912

BEAUFORT COUNTY SOCIETY

President:		
Secretary: Peters, August, Washington; Univ. of Ga., 1935	1938	1939
Bonner, J. B., Aurora; Univ. of Md.; Coll. of P. & S., 1918; U.N.C.	1918	1920
Ford, D. E., Washington; Univ. of Mich., 1908	1924	1925
Hackler, R. H., Washington; Jeff. Med. Coll., 1926	1926	1928
Mariner, N. B., Belhaven (Hon.); Univ. Coll. of Med., Va., 1903	1903	1904
Nicholson, P. A., Washington (Hon.); P. & S., Balt., 1889	1889	1890
Ramsay, Jas. G., Washington; Univ. of Pa., 1922; U.N.C.	1924	1924
Rodman, J. C., Washington (Hon.); Bellevue Med. Coll., 1892	1892	1895
Swindell, Lewis H., Washington; Univ. of Pa., 1916	1916	1919
Tayloe, John Cotton, Washington; Univ. of Pa., 1922; U.N.C.	1924	1925
Tayloe, Joshua, II, Washington; Univ. of Pa., 1923; U.N.C.	1923	1926
Underwood, M. K., Belhaven; Med. Coll. of Va., 1937	1937	1939
Winstead, Ellis G., Belhaven; Med. Coll. of Va., 1929	1929	1930

BERTIE COUNTY SOCIETY

President: Garriss, Frank Henry, Lewiston; Jeff. Med. Coll., 1912	1912	1918
Secretary: Jordan, W. P., Windsor; Univ. of Md., 1935	1935	1939
Castelloe, Cola, Windsor; Univ. of Pa., 1917; U.N.C.	1917	1926
Norfleet, Edgar Powell, Roxobel; Med. Coll. of Va., 1914	1914	1920
Saunders, Shelden A., Aulander; Jeff. Med. Coll., 1914	1914	1918
Sawyer, Charles Judson, Windsor (Hon.); P. & S., Balt., 1895	1895	1897
Smith, Joseph Elmer, Windsor; Med. Coll. of Va., 1921	1921	1922

BLADEN COUNTY SOCIETY

President:		
Secretary: Glenn, Channing, Elizabethtown; Med. Coll. of Va., 1933	1936	1939
Bennett, E. C., Elizabethtown; Med. Coll. of Va., 1926	1926	1927
Bridger, D. H., Bladenboro; Jeff. Med. Coll., 1922	1922	1925
Clark, D. D., Clarkton; Med. Coll. of Va., 1917	1917	1920
Cromartie, R. S., Elizabethtown (Hon.); N. C. Med. Coll., 1900	1900	1906
Hutchinson, S. S., Bladenboro; N. C. Med. Coll., 1911	1911	1917
Singletary, G. C., Clarkton; Univ. of Pa., 1917	1917	1918

BRUNSWICK COUNTY SOCIETY

BUNCOMBE COUNTY SOCIETY

Name and Address	*Licensed*	*Joined State Society*
President: Hollyday, W. M., Asheville; Univ. of Md., 1908	1914	1915
Secretary: Kutscher, G. W., Jr., Asheville; Univ. of Pittsburgh, 1923	1925	1926
Ambler, Arthur C., Asheville; Jeff. Med. Coll., 1920; U.N.C.	1921	1922
Anderson, J. B., Asheville; Univ. of Md., 1935	1935	1938
Archer, Isaac J., Black Mountain (Hon.); Northwestern Univ., 1896	1905	1907
Baier, Geo. F., Jr., Asheville; Hahnemann Med. Coll., 1906	1920	1930
Baker, W. E., Arden; Chattanooga Med. Coll., 1908; U.N.C.	1915	1916
Barrier, H. W., Black Mountain; Chicago Med. School, 1921	1931	1936
Beall, L. G., Black Mountain (Hon.); N. C. Med. Coll., 1906; Univ. of Pa., 1911	1906	1906
Belcher, C. C., Asheville; Tulane, 1930	1939	1940
Bittinger, S. M., Black Mountain; George Washington Univ., 1918	1924	1924
Bliss, Forrest E., Fletcher; Coll. of Med. Evangelists, 1933	1933	1934
Blumberg, Alfred, Asheville; Univ. of Colorado, 1923	1928	1929
Brewton, W. A., Enka; Univ. of Pa., 1927; Wake Forest, 1925	1927	1929
Briggs, Henry H., Jr., Asheville; Yale, 1931	1933	1934
Brookshire, Harley G., Asheville (Hon.); N. C. Med. Coll., 1905	1905	1906
Brown, Kermit E., Asheville; Jeff. Med. Coll., 1927	1927	1930
Brownsberger, Ethel, Biltmore; Coll. of Med Evangelists, 1927	1933	1934
Brownsberger, John F., Fletcher; Coll. of Med. Evangelists, 1925	1928	1929
Buckner, J. M., Swannanoa; Univ. of N. C., 1909	1909	1912
Bunts, Robert C., Asheville; Med. Coll. of Va., 1931	1938	1939
Burton, C. M., Asheville; Univ. of Cincinnati, 1936	1938	1938
Chapman, E. J., Asheville; Northwestern Univ., 1928	1939	1940
Clapp, Hubert, Swannanoa; Univ. of Ga., 1937	1938	1938
Clark, Harold S., Asheville; Univ. of Pa., 1922; U.N.C.	1922	1924
Cocke, Charles Hartwell, Asheville; Cornell Univ., 1905	1912	1913
Cocke, Jere E., Asheville (Hon.); Louisville Med. Coll., 1905	1905	1906
Cooley, S. S., Black Mountain; Univ. of Bellevue Hosp., N. Y. City, 1934	1938	1938
Craddock, Alva B., Asheville; Johns Hopkins, 1918	1923	1924
Crow, S. L., Asheville; Emory Univ., 1925	1926	1927
Crump, C. L., Asheville; Baylor Univ., 1930	1935	1936
Crump, Curtis, Asheville; Harvard, 1926	1933	1934
Dougherty, J. H., Asheville; N. Y. Univ., 1934	1936	1937
Eckel, O. F., Asheville (Hon.); Med. Coll. of S. C., 1906	1907	1908
Edwards, B. O., Asheville (Hon.); N. C. Med. Coll., 1905	1905	1909
Elias, Lewis W., Asheville (Hon.); Columbia Univ., Coll. of P. & S., 1903	1906	1906
Feldman, Leon H., Asheville; Univ. of Md., 1934	1938	1938
Freeman, Wm. T., Biltmore; Univ. of Ga., 1917	1927	1929
Gillespie, S. C., Asheville; Univ. of Cincinnati, 1931	1935	1936
Grantham, Wm. L., Asheville (Hon.); N. C. Med. Coll., 1906	1906	1908
Greene, Joseph B., Asheville; Univ. of Va., 1893	1910	1911
Greenwood, A. B., Asheville; Johns Hopkins, 1916	1916	1918
Griffith, F. Webb, Asheville; Johns Hopkins, 1906	1911	1912
Griffith, L. M., Asheville; Johns Hopkins, 1915	1916	1918
Henderson, Irma C., Asheville, Tulane, 1933	1934	1935
Hensley, Chas. A., Asheville; Jeff. Med. Coll., 1917; Wake Forest, 1915	1917	1927
Herbert, Wm. P., Asheville, Univ. of Va., 1907	1910	1911
Hipps, A. G. T., Asheville; Jeff. Med. Coll., 1916; Wake Forest, 1914	1916	1920
Huffines, T. R., Asheville; Indiana Univ., 1919	1922	1924
Huston, John Walter, Asheville; Rush Med. Coll., 1904	1912	1913
Ingersoll, Louise M., Asheville; Woman's Med. Coll., 1914	1915	1917
Ivey, R. R., Asheville; Univ. of Ala., 1909	1921	1921
Johnson, Walter R., Asheville; Univ. of Minnesota, 1924	1933	1934
Jones, Catesby, Asheville; Univ. of Md., 1893	1931	1932
Kinley, J. W., Cuyahoga Falls, Ohio; McGill Univ., 1931	1937	1938
Knoefel, A. E., Jr., Black Mountain; La. Univ. School of Med., 1935	1935	1938
Knoefel, A. E. Sr., Black Mountain; Univ. of Louisville, 1893	1914	1916
Lindberg, O. S., Asheville; Coll. of Med. Evangelists, 1923	1925	1928
Lord, Marjory J., Montreat; Univ. of Mich., 1916	1918	1919
Lott, Wm. Clifton, Asheville; Univ. of Colorado, 1929	1930	1931
MacRae, J. D., Asheville; Univ. of Pa., 1927; U.N.C.	1927	1930
Matros, Nathaniel H., Oteen; Marquette Univ., 1930	1933	1934
McCall, A. C., Asheville; Univ. of Md., 1910; U.N.C.	1910	1914
McCracken, C. M., Fairview (Hon.); N. C. Med. Coll., 1896	1896	1904
McGowan, J. C., Asheville; Univ. of Md. and Coll. of P. & S., 1929	1937	1939
Mears, George A., Asheville;Syracuse Univ., 1924; Wake Forest, 1922	1924	1927
Meriwether, Benj. Morsell, Asheville; Univ. of Louisville, 1915	1915	1924
Millender, Chas. W., Asheville; Tulane, 1919	1921	1924

Name and Address	*Licensed*	*Joined State Society*
Moore, Julian A., Asheville; Univ. of Pa., 1918; U.N.C.	1918	1921
Morgan, B. E., Asheville; Univ. of Tenn., 1917	1921	1922
Morgan, G. A., Asheville; Univ. of Tenn., 1917	1920	1926
Murphy, Gibbons W., Asheville; Emory Univ., 1923	1923	1927
Norburn, Chas. S., Asheville; Univ. of Va., 1917; U.N.C.	1921	1924
Norburn, K. L., Asheville; Vanderbilt Univ., 1925	1925	1927
Ormond, A. L., Black Mountain; Jeff. Med. Coll., 1930	1930	1935
Orr, Charles C., Asheville (Hon.); Univ. of Md., 1904; U.N.C.	1904	1905
Orr, Porter B., Asheville (Hon.); Jeff. Med. Coll., 1901; U.N.C.	1901	1904
Parker, G. F., Asheville; Univ. of Pa., 1923; U.N.C.	1924	1926
Pearson, Arthur A., Fletcher; Coll. of Med. Evangelists, 1937	1939	1940
Pritchard, G. L., Black Mountain; Univ. Coll. of Med., 1913	1913	1926
Reeves, R. J., Leicester; Vanderbilt Univ., 1913	1913	1932
Richardson, Frank H., Black Mountain; Cornell Univ., 1906	1919	1920
Ringer, Paul H., Asheville (Hon.); Columbia Univ., Coll. of P. & S., N. Y., 1904	1906	1907
Roberts, Roy F., Asheville; Tulane, 1933	1933	1935
Russell, W. M., Asheville; Univ. of Cincinnati, 1928	1931	1932
Saunders, John T., Asheville; Columbia Univ., 1926	1934	1935
Schaffle, Karl, Asheville; Univ. of Pa., 1907	1926	1927
Schoenheit, E. W., Asheville; Jeff. Med. Coll., 1920	1920	1921
Scott, R. C., Asheville; Jeff. Med. Coll., 1902	1916	1919
Sevier, J. T., Asheville (Hon.); Jeff. Med. Coll., 1895	1895	1899
Shuford, Mary Frances, Asheville; Rush Med. Coll., 1934	1934	1935
Smith, B. R., Asheville; Jeff. Med. Coll., 1911	1913	1914
Sprinkle, C. N., Weaverville; Jeff. Med. Coll., 1910; U.N.C.	1910	1922
Suitt, R. B., Asheville; St. Louis Univ., 1932	1933	1938
Sullivan, D. J., Asheville; Temple Univ., 1934	1940	1940
Sullivan, J. T., Asheville; Bellevue Hospital, 1933	1935	1937
Swann, C. C., Asheville; Tulane, 1926	1930	1931
Tennent, G. S., Asheville (Hon.); N. C. Med. Coll., 1894	1894	1898
Ward, John LaB., Asheville; Med. Coll. of S. C., 1905	1921	1922
Weaver, W. J., Asheville (Hon.); Jeff. Med. Coll., 1898; U.N.C.	1897	1903
Weizenblatt, Sprinza, Asheville; Vienniese Univ. of Med., 1922	1929	1931
Westcott, W. E., Candler; Coll. of Med. Evangelists, 1926	1930	1932
White, R. A., Asheville; Univ. of Cincinnati, 1918	1920	1921
Whitehead, S. L., Asheville; Jeff. Med. Coll., 1921; Wake Forest, 1919	1921	1929
Willis, A. P., Candler; (Hon.); Univ. of N. C., 1904	1904	1906
Willis, C. A., Candler; Duke Univ., 1936	1938	1938
Wilson, R. B., Asheville; Univ. of Louisville, 1931	1933	1933
Worley, J. H., Asheville; Univ. of Tenn., 1931	1934	1935
Young, J. C., Asheville; Univ. of Tenn., 1926; Wake Forest, 1924	1926	1929

BURKE COUNTY SOCIETY

President: Billings, G. M., Morganton; Tulane, 1919	1919	1920
Secretary: Barbour, Edith Goodwin, Morganton; Woman's Coll. of Pa., 1932	1934	1934
Achard, Lucien, Morganton; R. Univ. of Naples (Italy)) 1895	1929	1930
Ervin, John W., Morganton; Med. Coll. of Va., 1933; U.N.C.; Wake Forest	1935	1936
Hamer, A. W., Morganton; S. C. Med. Coll., 1921	1938	1940
Helms, J. Bivins, Morganton; Univ. of Pa., 1928; Wake Forest, 1926	1928	1931
Kendrick, Charles M., Valdese; Duke Univ., 1933	1939	1939
Kibler, W. H., Morganton; Univ. of Pa., 1914; U.N.C.	1914	1918
Kirksey, James J., Morganton; Univ. of Pa., 1921; U.N.C.	1921	1923
Long, R. H., Morganton; Jeff. Med. Coll., 1916; U.N.C.	1916	1923
Lynn, C. K., Valdese; Med. Coll. of Va., 1932	1933	1937
McCampbell, John, Morganton (Hon.); Balt. Med. Coll., 1894	1895	1899
McKee, John S., Jr., Morganton; Univ. of Pa., 1929; U.N.C.	1929	1936
Palmer, Yates, S., Valdese; Med. Coll. of Va., 1931	1931	1933
Patton, W. H., Jr., Morganton; Univ. of Pa., 1937	1937	1940
Phifer, Edward W., Morganton (Hon.); N. C. Med. Coll., 1902	1902	1904
Riddle, J. B., Morganton (Hon.); Vanderbilt Univ., 1898	1904	1904
Saunders, John Rudolph, Morganton; Emory Univ., 1926; Wake Forest, 1924	1926	1931
Taylor, E. H. E., Morganton; Tulane, 1924; Wake Forest, 1922	1924	1925
Vernon, James W., Morganton; Jeff. Med. Coll., 1909; Wake Forest, 1907	1909	1913
Walton, C. L., Glen Alpine; Med. Coll. of Va., 1931	1931	1933
Watkins, Fonso B., Morganton (Hon.); Jeff. Med. Coll., 1907; U.N.C.	1907	1910

CABARRUS COUNTY SOCIETY

Name and Address	*Licensed*	*Joined State Society*
President: White, Eustace, Kannapolis; Tulane, 1926	1926	1940
Secretary: Monroe, Lance T., Kannapolis; N. Y. Univ., 1932	1937	1938
Burns, J. E., Concord; Med. Coll. of Va., 1923	1923	1928
Busby, Julian, Kannapolis; Univ. of Md., 1904	1904	1905
Craven, Fred T., Concord; N. Y. Univ., 1938	1938	1940
Cree, Maurie B., Concord; Duke Univ., 1934	1939	1940
King, Richard M., Concord (Hon.); Jeff. Med. Coll., 1903	1903	1906
Lubchenko, N. E., Harrisburg; N. C. Med. Coll., 1915	1915	1916
MacFadyen, Paul R., Concord; Univ. of Va., 1929	1929	1932
Morris, Rae H., Concord; Jeff. Med. Coll., 1929	1929	1932
Morrison, H. K., Sherbourne, La.	——	1938
Smoot, J. E., Concord (Hon.); Balt. Med. Coll., 1893	1894	1902
Swann, Jos. F., Kannapolis (Hon.); P. & S., Balt., 1896	1896	1904
Tuttle, M. S., Kannapolis; Temple Univ., 1938	1938	1940
Yow, I. A., Concord; N. C. Med. Coll., 1906	1906	1910

CALDWELL COUNTY SOCIETY

President: Kent, Alfred A., Jr., Granite Falls; Univ. of Pa., 1931	1931	1934
Secretary: Hamer, Douglas, Jr., Lenoir; Med. Coll. of S. C., 1927; U.N.C.	1927	1930
Blackwelder, Verne H., Lenoir; Univ. of Pa., 1929; U.N.C.	1929	1931
Byerly, Wesley Grimes, Lenoir; Med. Coll. of Va., 1924	1924	1925
Corpening, O. J., Granite Falls (Hon.); Univ. Coll. of Med., 1906	1906	1906
Dula, Frederick M., Lenoir; Vanderbilt Univ., 1932; U.N.C.	1934	1934
Fetner, L. M., Lenoir; N. C. Med. Coll., 1914	1914	1938
Goodman, A. B., Lenoir (Hon.); N. C. Med. Coll., 1898	1897	1904
Hedrick, Clyde R., Lenoir; Georgetown Med. School, 1925; U.N.C.	1925	1926
Houck, Albert, Chilsburg, Va. (Hon.); P. & S., Balt., 1884	1891	1893
Kent, Alfred A., Winter Park, Fla. (Hon.); Jeff. Med. Coll., 1885	1885	1894
Lore, Ralph, Lenoir; Rush Med. Coll., 1932	1933	1937
McNairy, Caroline, Lenoir; Woman's Med. Coll. of Pa., 1917	1917	1919
Rudisill, J. D., Lenoir; Univ. of Md., 1922	1922	1923
Russell, C. R., Granite Falls; Univ. Coll. of Med., 1909; U.N.C.	1909	1918
Troutman, B. S., Lenoir; Univ. of Md., 1936	1936	1939
Warfield, Mary Cabell, Blowing Rock; Woman's Med. Coll. of Pa., 1922	1928	1935

CAMDEN—SEE PASQUOTANK-CAMDEN-CURRITUCK-DARE

CARTERET COUNTY SOCIETY

Bonner, K. P. B., Morehead City (Hon.); Med. Coll. of Va., 1905; U.N.C.	1905	1905
Royal, Ben F., Morehead City; Jeff. Med. Coll., 1909; U.N.C.	1909	1912

CASWELL—SEE ALAMANCE-CASWELL

CATAWBA COUNTY SOCIETY

President: Cloninger, K. L., Conover; Univ. of Md., 1931; U.N.C.	1931	1933
Secretary: Hambrick, Robt. T., Hickory; Tulane, 1923; U.N.C.	1923	1924
Barnes, H. E., Hickory; Univ. of Md., 1935	1935	1938
Cochrane, J. D., Newton; Univ. of Md., 1912	1912	1923
Fresh, W. M., Hickory; Medico-Chirurgical Coll. of Phila., 1906	1913	1919
Fritz, William A., Hickory; Temple Univ., 1933	1933	1934
Frye, Glenn R., Hickory; Jeff. Med. Coll., 1921; U.N.C.	1921	1923
Hunsucker, Chas. R., Hickory; N. C. Med. Coll., 1913	1913	1920
Jones, F. W., Newton; Med. Coll. of Va., 1934	1939	1940
Long, T. W., Newton; Emory Univ., 1935	1935	1936
Menzies, H. C., Hickory (Hon.); N. C. Med. Coll., 1894	1894	1899
Nowell, S. C., Hickory; Univ. of Pa., 1921	1922	1924
Shipp, Geo. W., Newton; Univ. of Md., 1910	1911	1915
Stewart, Dan N., Hickory; Univ. of Pa., 1935	1935	1938
Vermilya, G. D., Hickory; Med. Coll. of Va., 1932	1938	1938
Whaley, James D., Hickory; Med. Coll. of S. C., 1925	1927	1936

CHATHAM COUNTY SOCIETY

President: Lippert, Karl Morgan, Lancaster, S. C.; Univ. of Cincinnati, 1933	1938	1938
Secretary: Earle, J. B., Siler City; Med. Coll. of Va., 1935	1935	1938
McBane, T. W., Pittsboro; Med. Coll. of Va., 1927	1927	1929
Thomas, W. Clyde, Siler City; Med. Coll. of Va., 1917	1917	1920
Wrenn, G. C., Siler City; Med. Coll. of S. C., 1937	1937	1939

CHEROKEE COUNTY SOCIETY

Name and Address	*Licensed*	*Joined State Society*
President: Taylor, Frank V., Murphy; N. C. Med. Coll., 1915	1915	1936
Secretary: Miller, Harry, Murphy; Emory Univ., 1934	1936	1938
Glenn, E. B., Hiwassee Dam; Jeff. Med. Coll., 1931	1931	1938
Heighway, S. C., Murphy (Hon.); Med. Coll. of Ohio, 1885	1904	1898
Hill, J. N., Murphy (Hon.); Univ. of Louisville, 1909	1909	1909
Hoover, William A., Murphy; Univ. of Md., 1933; Wake Forest	1933	1938
Morrow, W. C., Andrews; Atlanta School of Med., 1909	1909	1909
Webb, B. G., Andrews (Hon.); Louisville Med. Coll., 1885	1885	1885
Whichard, M. P., Murphy; Univ. of Md., 1910	1910	1918
Whitfield, B. W., Murphy; Tulane, 1920	1920	1935
Young, G. McD., Postell; Lincoln Memorial Univ., 1916	1917	1918

CHOWAN-PERQUIMANS COUNTIES SOCIETY

President: Powell, Jesse A., Edenton (Hon.); Coll. of P. & S., Balt., 1907	1908	1909
Secretary:		
Vaughan, Roland H., Edenton; Univ. of Va., 1935	1938	1939
Wisely, Martin, Edenton; Univ. of Va., 1935	1937	1938

CLAY—SEE MACON-CLAY

CLEVELAND COUNTY SOCIETY

President: Padgett, Chas. K., Shelby; Jeff. Med. Coll., 1930	1930	1934
Secretary: Mitchell, Thos. B., Shelby; Univ. of Pa., 1924	1925	1927
Aydlette, Joseph P., Earl (Hon.); Univ. of Ky., 1901	1903	1903
Bridges, D. T., Lattimore, Emory Univ., 1926; Wake Forest, 1924	1926	1928
Falls, Fred, Lawndale; Tulane, 1930	1930	1933
Gibbs, E. W., Shelby; Univ. of N. C., 1907	1907	1918
Gold, Ben, Shelby; Univ. of Md., 1920; U.N.C.	1921	1922
Gold, T. B., Shelby; N. C. Med. Coll., 1911	1911	1915
Hamrick, John, Shelby; Univ. of Md., 1935	1935	1940
Harbison, J. W., Shelby; Johns Hopkins, 1919; U.N.C.	1919	1924
Houser, E. A., Shelby (Hon.); Chattanooga Med. Coll., 1898; Balt. Univ., 1902	1902	1904
Kendall, B. H., Shelby; Univ. of Md., 1929; U.N.C.	1929	1931
Lackey, W. J., Fallston; Univ. of Va., 1928	1928	1929
Lattimore, E. B., Shelby (Hon.); Bellevue Med. Coll., 1897	1896	1904
Lee, Lawrence Victor, Lattimore (Hon.); Emory Univ., 1894	1897	1904
Mitchell, Z. P., Shelby; Med. Coll. of Va., 1920; Wake Forest	1920	1921
Moore, D. F., Shelby; Jeff. Med. Coll., 1923; Wake Forest, 1923	1925	1927
Moore, Ernest Vick, Earl; Med. Coll. of S. C., 1933	1933	1938
Oates, George, Grover (Hon.); Univ. of Louisville, 1894	1902	1904
Padgett, Philip C., Kings Mountain; Tulane, 1935	1936	1940
Parker, S. F., Shelby; Med. Coll. of Va., 1929	1929	1931
Ramseur, W. L., Kings Mountain; Med. Coll. of S. C., 1926	1927	1929
Royster, S. S., Shelby (Hon.); Tenn. Med. Coll., 1891	1896	1904
Schenk, Sam. M., Shelby; Univ. of Pa., 1923; U.N.C.	1923	1926
Sherrill, H. R., Shelby; Univ. of Tenn., 1926	1926	1927
Thompson, H. C., Shelby; Tulane, 1930; U.N.C.	1931	1932
Washburn, C. Y., Mooresboro; Jeff. Med. Coll., 1937	1937	1939

COLUMBUS COUNTY SOCIETY

President: Smith, Slade A., Whiteville; N. C. Med. Coll., 1907	1907	1921
Secretary: Johnson, Floyd, Whiteville (Hon.); Memphis Hos. Med. Coll., 1903	1903	1904
Cox, G. S., Tabor City; N. C. Med. Coll., 1911	1911	1914
Dawson, J. N., Lake Waccamaw; Med. Coll. of Va., 1932; U.N.C.	1932	1934
Elliott, G. D., Fair Bluff; Univ. of Pa., 1923	1923	1926
Floyd, A. G., Whiteville; Med. Coll. of S. C., 1937	1937	1939
Floyd, L. D., Fair Bluff; N. C. Med. Coll., 1911	1911	1912
Formyduval, T., Whiteville; Med. Coll. of Va., 1919	1920	1922
Greene, W. A., Whiteville; Northwestern Univ., 1934	1935	1936
Mickley, Jack, Tabor City; Univ. of Md., 1932	1934	1937
Miller, W. Edwin, Whiteville; Emory Univ., 1929	1934	1935
Sadler, R. C., Whiteville; N. C. Med. Coll., 1912	1912	1915
Sinclair, R. T., Whiteville; Georgetown Univ., 1938	1938	1940
Smith, W. F., Chadbourn (Hon.); N. C. Med. Coll., 1904	1904	1905
Walton, G. B., Chadbourn; Tulane, 1930	1930	1935
Whitaker, R. B., Whiteville; Univ. Coll. of Med., 1912	1912	1913

Name and Address	*Licensed*	*Joined State Society*
Williams, William N., Tabor City; Med. Coll. of Va., 1924	1924	1925
Williamson, Ross M., Tabor City; Univ. of Pa., 1937	1937	1940

CRAVEN COUNTY SOCIETY

President:		
Secretary: Kaker, Oscar A., New Bern; Univ. of Md., 1934	1934	1937
Ashford, Chas. Hall, New Bern; Johns Hopkins, 1927; U. N. C., 1925	1927	1931
Jones, R. Duval, New Bern (Hon.); Univ. of Md., 1896; U.N.C.	1897	1897
McGeachy, R. S., New Bern (Hon.); Bellevue Hosp., 1894	1894	1895
Patterson, Joseph F., New Bern (Hon.); Jeff. Med. Coll., 1906; U.N.C.	1906	1906
Pollock, Raymond, New Bern (Hon.); Jeff. Med. Coll., 1897	1900	1900
Wadsworth, H. B., New Bern; Johns Hopkins, 1918	1918	1923

CUMBERLAND COUNTY SOCIETY

President: Harry, J. M., Fayetteville; Med. Coll. of Va., 1934	1934	1936
Secretary: McFadyen, O. L., Fayetteville; N. C. Med. Coll., 1912	1912	1912
Allgood, R. A., Fayetteville; Univ. of Md.; Coll. of P. & S., Balt., 1912	1915	1917
Bullock, Thomas C., Autryville (Hon.); Coll. of P. & S., Balt., 1885	1885	1886
Cannon, E. Gaines, Hope Mills; Med. Coll. of Va., 1931	1936	1938
DeCamp, Allen Ledyard, Fayetteville; Univ. of Pa., 1934	1937	1938
Elfman, Samuel L., Fayetteville; Med. Coll. of Va., 1935	1936	1937
Foster, M. T., Fayetteville; Emory Univ., 1927; Wake Forest, 1925	1927	1930
Highsmith, J. F., Jr., Fayetteville; Univ. of Pa., 1927	1927	1929
Highsmith, Seavy, Fayetteville (Hon.); Univ. Coll. of Med., 1901	1901	1902
Highsmith, W. C., Fayetteville; Univ. of Cincinnati, 1931; U.N.C.	1930	1932
Lackay, R. Howard, Fayetteville	——	1940
Lilly, James M., Fayetteville (Hon.); Univ. Coll. of Med., 1903; U.N.C.	1903	1904
McKay, W. P., Fayetteville; Tulane, 1916; U.N.C.	1916	1921
Parker, W. T., Fayetteville; Med. Coll. of S. C., 1928	1931	1933
Pittman, R. L., Fayetteville; Jeff. Med. Coll., 1910; U.N.C.	1910	1912
Pittman, W. A., Fayetteville; Temple Univ., 1932; Wake Forest, 1930	1932	1934
Rainey, W. T., Fayetteville; Univ. Coll. of Med., 1913	1913	1916
Robertson, J. N., Fayetteville; Med. Coll. of Va., 1923	1923	1924
Salters, Fred, Fayetteville; S. C. Med. Coll., 1935	1939	1940
Shaw, J. A., Fayetteville; Univ. of Pa., 1923; U.N.C., 1921	1923	1926
Verdery, W. C., Fayetteville; Univ. of Ga., 1915	1920	1921

CURRITUCK—SEE PASQUOTANK-CAMDEN-CURRITUCK-DARE

DARE—SEE PASQUOTANK-CAMDEN-CURRITUCK-DARE

DAVIDSON COUNTY SOCIETY

President:		
Secretary: Lohr, Dermot, Lexington; Jeff. Med. Coll., 1934	1934	1938
Alexander, G. T., Thomasville; Emory Univ., 1922	1933	1934
Andrew, John M., Lexington; N. Y. Univ. and Bellevue Hosp. Med. Coll., 1932	1932	1934
Bender, John R., Lexington; Med. Coll. of Va., 1935	1935	1939
Block, M. E., Lexington; Tulane, 1933	1933	1937
Cathell, E. J., Lexington; Emory Univ., 1930	1930	1932
Cathell, Jas. L., Lexington; Emory Univ., 1937	1937	1939
Clyatt, Claude Eugene, Denton; Univ. of Ga., 1911	1923	1924
Craven, Erle, Jr., Lexington; Johns Hopkins, 1929	1932	1935
Craven, Jean, Lexington; Johns Hopkins, 1930	1933	1935
Farrington, R. K., Thomasville; Univ. of Cincinnati, 1925; U.N.C.	1925	1927
Gambrell, Grover C., Lexington; Univ. of Ga., 1912	1923	1924
Griffis, J. W., Denton; Med. Coll. of Va., 1932	1934	1937
Hunt, W. Bryce, Lexington; Univ. of Md., 1923; Wake Forest, 1921	1923	1924
Jennings, R. G., Thomasville; N. C. Med. Coll., 1913	1913	1920
Lancaster, F. J., Lexington; Jeff. Med. Coll., 1922; Wake Forest, 1920	1922	1924
Lanier, V. C., Welcome; Med. Coll. of Va., 1937	1937	1940
Leonard, J. C., Jr., Lexington; Jeff. Med. Coll., 1928	1928	1931
McDonald, R. L., Thomasville; Northwestern Univ., 1936	1937	1938
Mock, Frank Lowe; Lexington (Hon.); N. C. Med. Coll., 1908	1908	1908
Myers, H. T., Lexington; Med. Coll. of Va., 1935	1935	1940
Phillips, C. H., Thomasville; Balt. Univ. School of Med., 1892	1893	1911
Redwine, J. Dan, Lexington; Emory Univ., 1931	1931	1934
Sharpe, C. R., Lexington; Jeff. Med. Coll., 1914; Wake Forest, 1912	1914	1917
Sherrill, P. M., Thomasville; Vanderbilt Univ., 1931	1935	1937
Smith, J. A., Lexington; N. C. Med. Coll., 1915	1915	1917
Smith, William Gordon, Thomasville; Tulane, 1927; U.N.C.	1927	1928
Terry, J. R., Lexington; Univ. of Louisville, 1911	1912	1913
Vestal, Willis Jasper, Lexington (Hon.); Coll. of P. & S., Balt., 1883	1889	1893
Zimmerman, Robert U., Welcome (Hon.); N. C. Med. Coll., 1901	1901	1904

DAVIE—SEE ROWAN

DUPLIN COUNTY SOCIETY

Name and Address	*Licensed*	*Joined State Society*
President: Hawes, C. F., Rose Hill; Northwestern Univ., 1933	1932	1939
Secretary:		
Hundley, Deane, Jr., Wallace; Boston Med. Coll., 1934	1936	1938
Robinson, J. D., Wallace; Univ. of Md., 1915	1915	1917
Straughan, J. W., Warsaw; Med. Coll. of Va., 1924	1924	1925

DURHAM-ORANGE COUNTIES SOCIETY

President: Roberts, B. W., Durham; Univ. of Md., 1924; U.N.C.	1924	1927
Secretary: Eagle, Watt W., Durham; Johns Hopkins, 1925	1929	1930
Alyea, Edwin P., Durham; Johns Hopkins, 1923	1930	1930
Anderson, C. P., Durham; Northwestern Univ., 1935	1937	1937
Anderson, W. B., Durham; Johns Hopkins, 1924	1927	1928
Andrew, Lacey Allen, Jr., Durham; Duke Univ., 1932; U.N.C.	1932	1936
Arena, J. M., Durham; Duke Univ., 1932	1938	1939
Baker, Lenox D., Durham; Duke Univ., 1933	1937	1937
Baker, R. D., Durham; Harvard Univ., 1928	1934	1937
Berryhill, Walter Reece, Chapel Hill; Harvard Univ., 1927; U.N.C.	1928	1934
Bitting, Numa Duncan, Durham (Hon.); Jeff. Med. Coll., 1907; U.N.C.	1907	1909
Boone, W. H., Durham (Hon.); N. C. Med. Coll., 1902	1902	1904
Boone, W. W., Durham; Jeff. Med. Coll., 1923; U.N.C.	1923	1925
Bowles, Francis N., Durham; Med. Coll. of Va., 1924	1924	1926
Bowling, Edwin Holt, Durham (Hon.); Coll. of P. & S., Balt., 1891	1890	1908
Bowling, Jackson Murrell, Durham; Med. Coll. of Va., 1931	1931	1934
Brinkley, H. M., Durham; Jeff. Med. Coll., 1919; U.N.C.	1919	1923
Bullitt, J. B., Chapel Hill; Univ. of Va., 1897	1914	1915
Byrnes, Thomas H., Durham; Med. Coll. of S. C., 1926	1932	1932
Callaway, J. Lamar, Durham; Duke Univ., 1932	1937	1937
Carter, Bayard, Durham; Johns Hopkins, 1925	1925	1931
Cekada, Emil Bogonir, Durham; Johns Hopkins, 1929	1934	1934
Cooper, A. Derwin, Durham; Geo. Washington Univ., 1931	1933	1934
Coppridge, W. M., Durham; Jeff. Med. Coll., 1918; U.N.C.	1919	1920
Craig, Robert Lawrence, Durham; Johns Hopkins, 1935	1939	1940
Crispell, R. S., Durham; Cornell Univ., 1920	1933	1934
Davison, Wilburt C., Durham; Johns Hopkins, 1917	1927	1928
Dees, John Essary, Durham; Univ. of Va., 1933	1940	1940
Donnelly, Grant Lester, Chapel Hill; Duke Univ., 1933; U.N.C.	1933	1935
Farmer, William D., Durham; Duke Univ., 1934	1939	1939
Fassett, Burton W., Durham (Hon.); Balt. Med. Coll., 1898	1899	1909
Ferguson, George Burton, Durham; Jeff. Med. Coll., 1932	1937	1938
Fields, Leonard E., Chapel Hill; Univ. of Pa., 1929; U.N.C.	1929	1931
Finkelstein, Harold, Durham; Johns Hopkins, 1928	1937	1938
Fleming, Ralph Gibson, Rochester, Minn.; Univ. of Pa., 1936; U.N.C.	1936	1938
Fleming, William Leroy, Chapel Hill; Vanderbilt Univ., 1932	1940	1940
Fletcher, Richard Van, Durham; Johns Hopkins, 1933	1935	1939
Forbus, Wiley D., Durham; Johns Hopkins, 1923	1923	1936
Forrest, D. E., Hillsboro; Univ. of Md., 1930	1930	1933
Gardner, Clarence E., Jr., Durham; Johns Hopkins, 1928	1932	1932
Goudge, Mabel E., Durham; Ohio State Univ. Coll. of Med., 1922	1925	1927
Graham, W. A., Durham; Univ. of Pa., 1932	1932	1937
Graves, Robert Williams, Durham; Duke Univ., 1933	1937	1938
Hamblen, E. C., Durham; Univ. of Va., 1928	1931	1931
Hanes, F. M., Durham; Johns Hopkins, 1908	1916	1917
Hansen-Pruss, O. C., Durham; Johns Hopkins, 1924	1930	1931
Hardee, W. P., Durham; Jeff. Med. Coll., 1912; U.N.C.	1912	1924
Harrell, Geo. T., Jr., Durham; Duke Univ., 1936	1940	1940
Harris, Isaac E., Jr., Durham; Jeff. Med. Coll., 1933	1933	1939
Hart, Deryl, Durham; Johns Hopkins, 1921	1929	1930
Harton, R. A., Durham; Temple Univ., 1934 U.N.C.	1935	1936
Hedgepeth, E. McG., Chapel Hill; Univ. of Pa., 1931; U.N.C.	1931	1934
Hendrix, James Paisley, Durham; Univ. of Pa., 1930	1930	1939
Hicks, Calvin S., Durham (Hon.); Univ. of Md., 1904	1904	1904
Holloway, Joseph C., Durham; Tulane, 1927; U.N.C.	1928	1929
Holloway, Robert Lee, Durham (Hon.); Med. Coll. of Va., 1893	1893	1901
Holman, Russel L., Chapel Hill; Vanderbilt Univ., 1931	1938	1939
Horack, Harold M., Durham; Duke Univ., 1937	1939	1940
Johnson, Norman M., Durham (Hon.); Washington Univ., 1877	1889	1879
Johnston, Christopher, Durham; Johns Hopkins, 1926	1930	1930
Jones, Robert Randolph, Jr., Durham; Johns Hopkins, 1928	1933	1933
Jones, Thomas T., Durham; Johns Hopkins, 1932	1934	1935
Kerns, T. C., Durham; Univ. of Pa., 1911; U.N.C.	1911	1913

Name and Address	*Licensed*	*Joined State Society*
Lee, Albert Francis, Durham; Duke Univ., 1937	1939	1940
London, Arthur Hill, Jr., Durham; Univ. of Pa., 1927	1927	1930
MacNider, Wm. deB., Chapel Hill (Hon.); U.N.C., 1903	1903	1903
Manning, I. H., Chapel Hill (Hon.); Long Island Coll. Hospital, 1897; U. N. C.	1899	1901
Manning, I. H., Jr., Durham; Harvard Univ., 1935	1938	1939
Markham, Blackwell, Durham; Harvard Univ., 1922; U.N.C.	1922	1925
Martin, Donald S., Durham; Univ. of Rochester, 1930	1938	1939
McBryde, Angus M., Durham; Univ. of Pa., 1928	1931	1932
McCutcheon, W. B., Durham; Med. Coll. of Va., 1921	1921	1926
McKee, Lewis Middleton, Durham; Temple Univ., 1933; U.N.C.	1934	1934
McPherson, S. D., Durham (Hon.); Univ. of Md., 1903; U.N.C.	1903	1904
Milam, D. F., Chapel Hill; Univ. of Chicago, 1923	1939	1940
Morgan, W. G., Chapel Hill; Univ. of Pa., 1931 U. N. C	1931	1937
Nichols, R. E., Jr., Durham; Univ. of Pa., 1930; U.N.C.	1930	1932
Nichols, R. E., Sr., Durham (Hon.); Med. Coll. of Va., 1890	1890	1904
Nicholson, W. M., Durham; Johns Hopkins, 1931	1935	1937
Norton, Roy, Chapel Hill; Vanderbilt, 1928; U.N.C.	1928	1932
Orgain, Edward S., Durham; Univ. of Pa., 1930	1934	1936
Patterson, Fred G., Chapel Hill; Univ. of Pa., 1937 U. N. C	1937	1940
Pearse, Richard L., Durham; Harvard Univ., 1931	1938	1938
Perry, D. R., Durham; Jeff. Med. Coll., 1919; Wake Forest, 1917	1919	1922
Persons, Elbert Lapsley, Durham; Harvard Univ., 1927	1931	1931
Plummer, D. E., Durham; Med. Coll. of Va., 1934	1934	1938
Powell, Albert H., Durham; Univ. of Ga., 1924	1925	1926
Raney, R. Beverly, Durham; Harvard Univ., 1930	1934	1935
Reeves, Robert J., Durham; Baylor Univ., 1924	1930	1930
Richardson, W. P., Chapel Hill; Med. Coll. of Va., 1928; Wake Forest, 1926	1928	1929
Riggsbee, A. E., Durham; Univ. of N. C., 1909	1909	1911
Roberson, Foy, Durham; Jeff. Med. Coll., 1909; U.N.C.	1909	1912
Roberts, Bryan Nazer, Hillsboro; Univ. of Md., 1925; U.N.C.	1925	1926
Roberts, Louis C., Durham; Duke Univ., 1933	1935	1940
Robertson, E. M., Durham; Tulane, 1912; U.N.C.	1912	1929
Rosenau, M. J., Chapel Hill (Hon.); Univ. of Pa., 1889	1937	1937
Ross, Geo. H., Durham (Hon.); Univ. of Tenn., 1899	1899	1904
Ross, Robert A., Durham; Univ. of Pa., 1922; U.N.C.	1922	1926
Ruffin, J. M., Durham; Univ. of Va., 1926	1930	1931
Schiebel, Herman Max, Durham; Johns Hopkins, 1933	1938	1940
Schuler, J. E., Durham; Med. Coll. of Va., 1914	1920	1922
Smith, Annie T., Durham; Univ. of Ill., 1923; U.N.C.	1925	1926
Smith, D. T., Durham; Johns Hopkins, 1922	1931	1931
Speed, Joseph A., Durham; Jeff. Med. Coll., 1914	1914	1916
Spikes, N. O., Durham; Jeff. Med. Coll., 1924; U.N.C.	1924	1927
Sprunt, Douglas H., Durham; Yale Univ., 1927	1934	1935
Stanford, Lois Foote, Durham; Univ. of Pa., 1921	1923	1924
Stanford, W. R., Durham; Univ. of Pa., 1919; U.N.C.	1919	1923
Stone, Robert Edward, Chapel Hill; Harvard Univ., 1934 U.N.C	1937	1940
Strowd, W. A., Durham; Univ. of N. C., 1909	1909	1911
Sweaney, Hunter M., Durham; Univ. of Pa., 1919; U.N.C.	1919	1920
Thomas, Walter Lee, Durham; Univ. of Va., 1931	1937	1938
Tyler, E. R., Durham; Jeff. Med. Coll., 1923; U.N.C.	1923	1927
Vaughan, Walter Weddle, Durham; Jeff. Med. Coll., 1933 U.N.C	1933	1938
Wallace, W. S., Durham; Washington Univ., 1935	1938	1938
Watkins, Geo. T., Jr., Durham; Jeff. Med. Coll., 1915; Wake Forest, 1913	1915	1917
Watkins, W. M., Durham; Jeff. Med. Coll., 1923	1923	1925
Wilkins, R. B., Durham; N. C. Med. Coll., 1913	1913	1917
Woodhall, Barnes, Durham; Johns Hopkins, 1930	1937	1937

EDGECOMBE-NASH COUNTIES SOCIETY

President: Thorpe, A. T., Rocky Mount; Univ. of Pa., 1921; U.N.C.	1921	1923
Secretary: Smith, John Godrich, Rocky Mount; Duke Univ., 1934	1937	1938
Anderson, R. S., Rocky Mount; Univ. of Md., 1924; U.N.C.	1924	1932
Bailey, C. W., Rocky Mount; Jeff. Med. Coll., 1925; Wake Forest, 1923	1925	1930
Bass, Spencer P., Tarboro (Hon.); Univ. of Va., 1906	1907	1909
Battle, Margaret White, Rocky Mount; Univ. of Mich., 1933	1936	1937
Battle, N. P., Rocky Mount; Univ. of Pa., 1926; U.N.C.	1930	1931
Boice, E. S., Rocky Mount; Univ. of Pa., 1909	1914	1915
Brantley, Hassell, Spring Hope (Hon.); Jeff. Med. Coll., 1888	1888	1901
Brantley, J. C., Spring Hope; Jeff. Med. Coll., 1916	1916	1922
Bunn, J. P., Rocky Mount; Univ. of Md., 1935	1935	1938
Cole, Herman Alphonso, Rocky Mount; Univ. of Va., 1937	1939	1940

Name and Address	*Licensed*	*Joined State Society*
Coppedge, T. O., Nashville; Coll. of P. & S., Balt., 1908; U.N.C.	1909	1917
Crumpler, James Fulton, Rocky Mount; Bellevue Hosp. Med. School, 1930	1930	1935
Cutchin, J. Henry, Whitakers; Univ. Coll. of Med., 1911; U.N.C.	1911	1915
Daughtridge, A. L., Rocky Mount; Univ. of Md., 1924; U.N.C.	1924	1924
Deans, A. W., Battleboro; Med. Coll. of Va., 1915	1915	1917
Dixon, W. H., Rocky Mount; Jeff. Med. Coll., 1919	1919	1922
Edmondson, Frank, Tarboro; Temple Univ., 1937	1937	1939
Fleming, M. I., Rocky Mount; Jeff. Med. Coll., 1904; U.N.C.	1906	1919
Gorham, H. J., Nashville; Univ. of Md., 1926	1926	1927
Green, W. W., Tarboro (Hon.); Univ. of N. C., 1908	1908	1910
Jones, W. S., Nashville; Med. Coll. of Va., 1927; Wake Forest, 1925	1927	1927
Justa, Samuel H., Rocky Mount; Med. Coll. of Va., 1933	1934	1934
Kornegay, Lemuel W., Rocky Mount (Hon.); N. C. Med. Coll., 1906	1906	1906
Lane, John L., Rocky Mount; N. C. Med. Coll., 1906	1906	1914
Large, H. Lee, Rocky Mount; Med. Coll. of Va., 1917	1918	1918
Looney, J. J. W., Rocky Mount; Univ. of Va., 1909	1919	1919
Martin, J. H., Red Oak; Univ. of Nashville, 1903	1904	1916
Noell, R. H., Rocky Mount; Univ. of Med., 1916	1916	1920
Norfleet, A. C., Tarboro; Univ. of Pa., 1925	1925	1927
Parks, L. L., Jacksonville, Fla.; Vanderbilt Univ., 1928	1936	1936
Pearson, H. O., Pinetops; Med. Coll. of Va., 1926	1927	1928
Perry, E. M., Rocky Mount; Coll. of P. & S., Balt., 1907	1907	1919
Powell, E. C., Jr., Rocky Mount; Univ. of Pa., 1935	1935	1937
Raby, J. G., Tarboro; Univ. Coll. of Med., 1911	1911	1913
Ray, J. C., Whitakers; Univ. Coll. of Med., 1909	1909	1935
Roberson, E. L., Tarboro; Univ. of Md., 1934	1937	1939
Royster, Thomas H., Tarboro; Univ. Coll. of Med., 1908	1908	1914
Smith, C. T., Rocky Mount; Univ. of Pa., 1918; U.N.C.	1918	1920
Speight, J. A., Rocky Mount; Univ. of La., 1914; U.N.C.	1915	1916
Staley, S. Walter, Rocky Mount (Hon.); Med. Coll. of S. C., 1901; U. N. C.	1901	1904
Stone, M. L., Rocky Mount; Univ. of Pa., 1924; U.N.C.	1928	1928
Sykes, J. V., Rocky Mount; Univ. of Pa., 1929	1929	1930
Vann, J. R., Spring Hope; Jeff. Med. Coll., 1917	1917	1920
Wall, W. S., Rocky Mount; Univ. of Pa., 1933; U.N.C.	1933	1936
Way, Samuel Easom, Rocky Mount; Univ. of Md., 1933	1933	1938
Whitaker, J. Allen, Rocky Mount; Temple Univ., 1933; U.N.C.	1934	1935
Willis, B. C., Rocky Mount; Med. Coll. of Va., 1909	1916	1917
Wilson, Frank E., Tarboro; Univ. of Tenn., 1933	1933	1936
Wright, John, Macclesfield; Jeff. Med. Coll., 1937	1937	1938

FORSYTH COUNTY MEDICAL SOCIETY

President: Pool, B. B., Winston-Salem; Jeff. Med. Coll., 1923; Wake Forest, 1921	1923	1925
Secretary: Yoder, Paul A., Winston-Salem; Univ. of Pa., 1923; U.N.C.	1923	1925
Adams, Carlton N., Winston-Salem; Duke Univ., 1932	1936	1937
Ader, O. L., Walkertown; Univ. of Pa., 1925	1925	1927
Avery, E. S., Winston-Salem; Univ. of Pa., 1928	1928	1930
Beavers, J. W., Kernersville; Univ. of Pa., 1930; Wake Forest, 1928	1930	1935
Belton, J. F., Winston-Salem; Univ. of Pa., 1914	1914	1916
Benbow, Edgar V., Winston-Salem; Jeff. Med. Coll., 1925; U.N.C.	1925	1928
Benbow, J. T., Winston-Salem; N. C. Med. Coll., 1910	1910	1920
Bowers, M. A., Winston-Salem; Tulane, 1911; U.N.C.	1911	1914
Bradford, G. E., Winston-Salem; Univ. of Tenn., 1933	1935	1936
Brooks, E. Bruce, Winston-Salem; Duke Univ., 1933	1935	1936
Butler, Leroy J., Winston-Salem; Med. Coll. of Va., 1915	1920	1921
Bynum, Wade H., Germantown (Hon.); Univ. Coll. of Med., 1900	1900	1900
Carlton, Romulus L., Winston-Salem (Hon.); Univ. of Md., 1906	1906	1906
Carpenter, Coy C., Winston-Salem; Syracuse Univ., 1924; Wake Forest, 1922	1924	1927
Combs, Fielding, Winston-Salem; Med. Coll. of Va., 1923	1931	1932
Cooke, G. C., Winston-Salem; Univ. of Md., 1919; U.N.C.	1919	1920
Couch, V. F., Winston-Salem; Coll. of P. & S., N. Y., 1911; Wake Forest, 1908	1911	1919
Craig, S. Douglas, Winston-Salem; Tulane Univ., 1908	1911	1912
Dalton, Wm. N., Winston-Salem (Hon).; N. C. Med. Coll., 1904	1904	1905
Davis, J. P., Winston-Salem; Univ. of Pa., 1934	1937	1938
Davis, Thomas W., Winston-Salem (Hon.); S. C. Med. Coll., 1898; U. N. C.	1899	1899
DeLaney, Chas. O., Winston-Salem; Jeff. Med. Coll., 1919; U.N.C.	1919	1922
Drummond, C. S., Winston-Salem; Univ. of Ga., 1930	1933	1933
Fearington, J. C. P., Winston-Salem; Rush Med. Coll., 1930; U.N.C.	1933	1934
Fritz, O. G., Walkertown; Med. Coll. of Va., 1931	1932	1940

Name and Address	*Licensed*	*Joined State Society*
Garvey, Fred K., Winston-Salem; Univ. of Cincinnati, 1925; U.N.C.	1925	1932
Garvey, R. R., Winston-Salem; N. C. Med. Coll., 1915	1915	1919
Gilbert, E. L., Winston-Salem; Univ. of Tenn., 1932	1935	1936
Grimes, W. L., Winston-Salem; Johns Hopkins, 1910	1910	1915
Harrill, J. A., Winston-Salem; Univ. of Pa., 1935	1935	1939
Hart, O. J., Winston-Salem; Med. Coll. of S. C., 1925	1930	1932
Hege, J. Roy, Winston-Salem; Univ. of Md., 1916; U.N.C.	1916	1917
Helsabeck, B. A., Winston-Salem; Med. Coll. of Va., 1931	1931	1936
Helsabeck, Chester J., Walnut Cove; Univ. of Md., 1919	1919	1922
Helsabeck, R. S., King; N. C. Med. Coll., 1913	1913	1936
Henley, Ruth D., Winston-Salem; Woman's Med. Coll. of Pa., 1935	1937	1938
Holmes, G. W., Winston-Salem; Med. Coll. of Va., 1931	1931	1940
Hudgins, H. A., Winston-Salem; Emory Univ., 1936	1936	1939
Hurdle, S. W., Winston-Salem; Jeff. Med. Coll., 1914	1914	1915
Izlar, H. L., Winston-Salem; Med. Coll. of S. C., 1915	1916	1917
Johnson, Paul W., Winston-Salem; Univ. of Louisville, 1930	1932	1933
Johnson, Wingate M., Winston-Salem (Hon.); Jeff. Med. Coll., 1908	1908	1910
Jones, Beverley N., Winston-Salem; Med. Coll. of Va., 1915	1915	1921
Jones, R. Rives, Winston-Salem; Med. Coll. of Va., 1923	1923	1925
Keiger, O. R., Winston-Salem; Univ. Coll. of Med., 1911; U.N.C.	1911	1915
Kennedy, L. T., Winston-Salem; Jeff. Med. Coll., 1935	1937	1939
Kerr, Jas. Edwin, Danbury (Hon.); Univ. of Md., 1897	1898	1898
Kirby, W. L., Winston-Salem; Vanderbilt Univ., 1925	1926	1930
Lassiter, V. C., Winston-Salem; Emory Univ., 1925	1928	1929
Linville, Aaron Y., Winston-Salem (Hon.); Univ. of N. Y., 1889	1889	1896
Long, Vann McKee, Winston-Salem (Hon.); N. C. Med. Coll., 1906	1906	1908
Marshall, J. F., Winston-Salem; Univ. of Pa., 1931	1931	1935
Martin, B. F., Winston-Salem; Jeff. Med. Coll., 1936	1936	1940
Martin, Lester P., Mocksville; Jeff. Med. Coll., 1920	1920	1921
Mauzy, Chas. H., Jr., Winston-Salem; Univ. of Va., 1933	1938	1939
May, Wm. P., Winston-Salem; Geo. Washington Univ., 1935	1937	1938
McCants, C. H., Winston-Salem; Med. Coll. of S. C., 1925	1929	1931
MacMillan, E. A., Winston-Salem; Univ. of Pa., 1933	1933	1937
McMillan, R. L., Winston-Salem; Duke Univ., 1933	1936	1938
Moore, R. A., Winston-Salem; N. C. Med. Coll., 1911	1911	1917
Munt, H. F., Winston-Salem; Med. Coll. of Va., 1911	1914	1915
Ogburn, L. C., Winston-Salem; Jeff. Med. Coll., 1928	1928	1936
Paddison, Jno. Robt., Kernersville (Hon.); Univ. of Md., 1902; U.N.C.	1902	1904
Pepper, John K., Winston-Salem (Hon.); Coll. of P. & S., Balt., 1907	1908	1908
Pfohl, Samuel F., Winston-Salem (Hon.); Univ. of Pa., 1894	1898	1898
Poole, C. Glenn, Winston-Salem; Tulane, 1924	1924	1927
Rankin, S. W., Winston-Salem; Jeff. Med. Coll., 1912	1912	1914
Rousseau, J. P., Winston-Salem; Univ. of Md., 1918; U.N.C.	1920	1920
Schallert, P. O., Winston-Salem; Univ. of Ill., 1904	1911	1912
Simmons, R. R., Winston-Salem; Med. Coll. of Va., 1917	1923	1924
Sink, V. Rex, Winston-Salem; Univ. of Pa., 1928; U.N.C.	1930	1935
Slate, John S., Winston-Salem (Hon.); Univ. Coll. of Med., 1900	1899	1904
Spainhour, Ellis H., Winston-Salem (Hon.); Balt. Med. Coll., 1898	1898	1898
Speas, D. C., Winston-Salem; Univ. of Md., 1911	1913	1924
Speas, W. P., Winston-Salem, Univ. Coll. of Med., 1911	1911	1912
Spicer, Richard W., Winston-Salem; N. C. Med. Coll., 1910; Univ. of Pa., 1911	1910	1916
Sprunt, W. H. Jr., Winston-Salem; Univ. of Pa., 1918	1918	1925
Starling, H. M., Winston-Salem; Med. Coll. of Va., 1931	1931	1937
Stephenson, Anne L., Winston-Salem; Woman's Med. Coll. of Pa., 1937	1939	1940
Stone, G. E., King; Med. Coll. of Va., 1915	1915	1936
Street, C. A., Winston-Salem; Harvard Univ., 1918	1918	1925
Strickland, Edward F., Winston-Salem (Hon.); Univ. of N. Y., 1887; U. N. C.	1887	1893
Thompson, Edgar S., Winston-Salem; Univ. of N. Y., 1919	1919	1921
Tuttle, R. G., Winston-Salem; N. C. Med. Coll., 1909	1909	1913
Valk, A. deT., Winston-Salem; Johns Hopkins, 1910	1913	1914
Wall, R. L., Winston-Salem; Jeff. Med. Coll., 1912; Wake Forest, 1910	1912	1915
Whitaker, R. H., Kernersville; Univ. of Pa., 1934	1934	1939
Whittington, Jas. B., Winston-Salem; N. C. Med. Coll., 1911	1911	1913
Wright, O. E., Winston-Salem; Emory Univ., 1924	1924	1928
Wyatt, Wortham, Winston-Salem; Univ. of Pa., 1913; U.N.C.	1913	1916
Wylie, W. deK., Winston-Salem; Univ. of Va., 1924	1926	1928

FRANKLIN COUNTY SOCIETY

GASTON COUNTY SOCIETY

President: Glenn, Charles A., Gastonia; Med. Coll., of S. C., 1936	1936	1937
Secretary: Houser, Forrest M., Cherryville; Univ. of Pa., 1928; U.N.C.	1929	1930

Name and Address	*Licensed*	*Joined State Society*
Albright, Sam, Belmont; Georgetown Univ., 1934	1934	1937
Allen, M. H., Cramerton; Emory Univ., 1929	1930	1931
Anders, McT. G., Gastonia (Hon.); Md. Med. Coll., 1901	1902	1902
Anthony, J. E., Kings Mountain; Univ. of Tenn., 1911	1911	1911
Anthony, W. A., Gastonia; Med. Coll. of Va., 1929	1929	1932
Blair, J. L., Gastonia; Atlanta Med. Coll., 1915	1920	1921
Blair, J. Samuel, Gastonia; Med. Coll. of S. C., 1937	1938	1940
Glenn, H. F., Jr., Gastonia; Emory Univ., 1932	1932	1934
Glenn, Lucius N., Gastonia (Hon.); Univ. of Md., 1897	1897	1904
Grigg, John R., Gastonia; Univ. of Louisville, 1927	1928	1937
Groves, R. B., Lowell; Med. Coll. of Va., 1924	1924	1925
Henry, H. H., Gastonia; Tulane, 1936	1939	1940
Herrin, H. K., Gastonia; Med. Coll. of Va., 1935	1935	1937
Jones, W. M., Gastonia; Med. Coll. of S. C., 1922	1927	1928
Lyday, C. E., Gastonia; Atlanta School of Med., 1910	1910	1920
McAdams, C. R., Belmont; N. C. Med. Coll., 1912	1912	1916
McChesney, W. W., Gastonia; Med. Coll. of Va., 1915	1926	1927
Miller, R. C., Gastonia; N. C. Med. Coll., 1909; U.N.C.	1918	1919
Mitchell, R. H., Gastonia; Med. Coll. of Va., 1936	1936	1938
Moore, B. D., Mt. Holly; Med. Coll. of Va., 1915	1915	1921
Norman, Dorothy F., Gastonia	——	1940
Norman, J. Standing, Gastonia; Coll. of P. & S., Balt., 1909; U.N.C.	1911	1920
Patrick, Geo. R., Jr., Bessemer City; Univ. of Md., 1916	1916	1920
Powell, H. S., Gastonia; Univ. of Va., 1932	1932	1937
Pressly, J. M., Belmont; N. C. Med. Coll., 1915	1915	1920
Pugh, Chas. H., Gastonia; N. C. Med. Coll., 1910	1910	1913
Quickel, John C., Gastonia; Univ. of Pa., 1932; U.N.C.	1932	1936
Ramsaur, J. T., Cherryville; Univ. of Chicago, 1933	1934	1935
Reid, James W., Lowell (Hon.); Jeff. Med. Coll., 1908; U.N.C.	1908	1909
Rhyne, Robert Edgar, Gastonia (Hon.); N. C. Med. Coll., 1907	1907	1908
Roberts, W. M., Gastonia; Tufts, 1925	1928	1929
Robinson, James Lee, Gastonia; Univ. of Pa., 1932	1932	1936
Stroupe, A. U., Jr., Mount Holly; Med. Coll. of Va., 1931	1932	1938
Wilkins, Samuel A., Dallas (Hon.); Univ. of Ky., 1902	1903	1903

GATES COUNTY SOCIETY

Carter, Thomas L., Gatesville; Med. Coll. of Va., 1917	1917	1928

GRAHAM COUNTY SOCIETY

GRANVILLE COUNTY SOCIETY

President: Thompson, Joseph W., Creedmoor; Ky. Univ., Louisville, 1904	1907	1917
Secretary: Carrington, S. M., Oxford; Rush Med. Coll., 1931; U.N.C.	1931	1934
Bradsher, J. S., Stovall; Univ. of Va., 1925	1925	1928
Clay, E. L., Oxford; Univ. of Ky., 1929	1929	1933
Daniel, N. C., Oxford (Hon.); N. C. Med. Coll., 1895	1895	1903
Elliott, Julian C., Oxford; Univ. of Md., 1926; Wake Forest, 1924	1926	1929
Hays, B. K., Oxford (Hon.); Univ. Coll. of Med., 1894	1894	1897
Morris, Joseph A., Oxford (Hon).; Vanderbilt Univ., 1890	1893	1890
Noblin, Roy L., Oxford; Med. Coll. of Va., 1924	1924	1925
Norwood, Ballard, Oxford; Med. Coll. of Va., 1937	1937	1940
Taylor, Rives W., Oxford; Tulane, 1926; U.N.C.	1926	1928
Taylor, Wm. L., Oxford (Hon.); Univ. of Va., 1900	1901	1901
Thomas, Wm. N., Oxford; Med. Coll. of Va., 1911	1911	1914
Winston, P. H., Clarksville, Va.; Med. Coll. of Va., 1929	1929	1930

GREENE COUNTY SOCIETY

President: Carroll, F. W., Hookerton; Med. Coll. of Va., 1925; Wake Forest, 1923	1926	1927
Secretary: Walker, Robert Jeffrey, Jr., Snow Hill; Med. Coll. of Va., 1932	1934	1935
Dawson, W. E., Hookerton; Jeff. Med. Coll., 1920; Wake Forest, 1918	1920	1922
Ellinwood, Everett H., Snow Hill; Temple Univ., 1935; U.N.C.	1935	1937
Harper, J. H., Snow Hill (Hon.); Jeff. Med. Coll., 1905; U.N.C.	1906	1906
Jones, Clarence Porter, Jr., Snow Hill; Med. Coll. of Va., 1934	1939	1940
Whittington, Wm. W., Snow Hill (Hon.); Louisville Med. Coll., 1895	1895	1902

GUILFORD COUNTY SOCIETY

President: Davis, P. B., High Point; Jeff. Med. Coll., 1926	1926	1929
Secretary: Slate, J. E., High Point; Tulane, 1934	1934	1937
Treasurer: Perry, G. G., High Point; Med. Coll. of Va., 1933	1933	1934
Apple, E. D., Greensboro; Washington Univ., 1929	1929	1936

Name and Address	*Licensed*	*Joined State Society*
Aydlett, H. T., Greensboro (Hon.); Univ. of Va., 1894	1895	1906
Banner, A. C., Greensboro; Jeff. Med. Coll., 1920; U.N.C.	1920	1922
Banner, Chas. W., Greensboro (Hon.); Univ. of Md., 1899	1899	1901
Battle, John T. J., Greensboro (Hon.); Coll. of P. & S., Balt., 1884	1884	1890
Benton, Wayne J., Greensboro; Syracuse Univ., 1934	1934	1936
Bonner, M. D., Jamestown; Univ. of Md., 1930; U.N.C.	1930	1934
Bonner, O. B., High Point; Univ. of Md., 1917; U.N.C.	1920	1921
Brockmann, Harry L., High Point; Univ. of Pa., 1917; U.N.C.	1917	1921
Buie, R. M., Greensboro; Jeff. Med. Coll., 1914; Wake Forest, 1912	1914	1917
Cardwell, D. W., Greensboro; Med. Coll. of Va., 1932	1936	1937
Cater, C. D., Greensboro; Emory Univ., 1920	1923	1924
Clary, Wm. T., Greensboro; Univ. of Pa., 1928; U.N.C.	1928	1934
Cole, Walter F., Greensboro (Hon.); Johns Hopkins, 1909	1909	1910
Collings, Ruth M., Greensboro; Univ. of Pa., 1923	1926	1927
Cook, H. L., Jr., Greensboro; Jeff. Med. Coll., 1918; U.N.C.	1918	1920
Cook, J. L., Greensboro; Univ. of Pa., 1925; U.N.C.	1925	1928
Cozart, S. R., Greensboro; Med. Coll. of Va., 1923	1923	1925
Dees, Ralph Erastus, Greensboro (Hon.); Univ. of Md., 1906	1908	1909
Dees, Rigdon O., Greensboro (Hon.); Univ. of Md., 1906	1907	1907
Dick, Julius Vance, Gibsonville (Hon.); Univ. of N. C., 1907	1907	1908
Dunn, R. B., Greensboro; McGill Univ., 1933	1936	1937
Durham, C. W., Greensboro; Geo. Washington Univ., 1927	1927	1930
Edwards, V. E., Stokesdale; Univ. of Md., 1913	1913	1913
Flagge, Phillip W., High Point (Hon.); Washington Univ., 1902	1905	1906
Fortune, Alex. F., Greensboro (Hon.); Univ. Coll. of Med., 1900; U.N.C.	1900	1904
Fox, N. A., Greensboro; Univ. of Pa., 1924; U.N.C.	1924	1926
Geddie, K. B., High Point; Jeff. Med. Coll., 1921; U.N.C.	1921	1923
Glascock, Joy H., Greensboro (Hon.); Women's Med. Coll. of Balt., 1896	1896	1900
Gove, Anna M., Greensboro (Hon.); Woman's Med. Coll. of N. Y. Infirmary, 1892	1894	1896
Grayson, C. S., High Point (Hon.); Geo. Washington Univ., 1906	1907	1908
Groome, J. G., High Point; Univ. of Cincinnati, 1924; U.N.C.	1924	1925
Harrison, Edmund, Greensboro (Hon.); Univ. Coll. of Med., 1896	1900	1900
Harrison, Edward T., High Point; Johns Hopkins, 1926	1926	1928
Harvey, W. W., Greensboro; Emory Univ., 1920	1922	1923
Herring, R. A., High Point; Tulane, 1905; U.N.C.	1923	1924
Hiatt, H. B., High Point (Hon.); Univ. of Md., 1907; U.N.C.	1907	1907
Holladay, L. W., High Point; Med. Coll. of Va., 1929	1936	1937
Holt, D. W., Greensboro; Jeff. Med. Coll., 1918	1918	1921
Hudson, C. C., Greensboro; Univ. Coll. of Med., 1910	1918	1925
Jennings, C. W., II, Greensboro; Med. Coll. of Va., 1916	1916	1926
Johnson, Harry L., Greensboro; Univ. of Cincinnati, 1924	1924	1927
Jones, Wm. M., Greensboro (Hon.); Univ. of Md., 1903	1903	1903
Keith, Marion Y., Greensboro; Univ. of Md., 1923	1923	1927
Knight, Wm. P., Greensboro (Hon.); Balt. Med. Coll., 1898	1898	1898
Leath, McLean B., High Point; Jeff. Med. Coll., 1933	1933	1937
LeBauer, Maurice L., Greensboro; Univ. of Va., 1929	1930	1932
LeBauer, S. F., Greensboro; Univ. of Va., 1929	1930	1932
Lewis, W. G., Stokesdale; Med. Coll. of Va., 1938	1938	1940
Little, H. L., Gibsonville; Washington Univ., 1934; U.N.C.	1934	1937
Lyday, R. O., Greensboro; Univ. of Pa., 1920; U.N.C.	1920	1927
Maness, A. K., Greensboro; Jeff. Med. Coll., 1928; U.N.C.	1928	1929
Mann, I. Thurman, High Point; Jeff. Med. Coll., 1912; U.N.C.	1912	1915
Mathews, Robert Wm., Greensboro; Emory Univ., 1932	1937	1938
McAlister, Jean, Greensboro; Univ. of Pa., 1933; U.N.C.	1936	1937
McAnally, Wm. J., High Point (Hon.); Balt. Med. Coll., 1897	1896	1899
McCain, Walkup K., High Point; Jeff. Med. Coll., 1929; U.N.C.	1929	1930
McCain, Wm. R., High Point (Hon.); Univ. of Md., 1897; U.N.C.	1898	1898
Merritt, Jesse Fred, Greensboro; Northwestern Univ., 1936	1937	1938
Miles, May S., Greensboro (Hon.); Laura Mem. Woman's Med. Coll., 1898	1904	1905
Mills, Chas. R., Greensboro; Univ. of Pittsburgh, 1936	1938	1938
Moseley, Chas. W., Greensboro (Hon.); Balt. Med. Coll., 1893	1893	1896
Norment, W. B., Greensboro; Jeff. Med. Coll., 1922; U.N.C.	1922	1932
Ogburn, H. H., Greensboro; Johns Hopkins, 1913; U.N.C.	1913	1914
Ownbey, Arthur D., Greensboro; Med. Coll. of Va., 1920	1925	1927
Parker, H. R., Greensboro; Univ. of Syracuse, 1923; Wake Forest, 1921	1924	1925
Parks, W. C., Jr., High Point; S. C. Med. Coll., 1938	1938	1940
Patterson, Fred. M., Greensboro; Univ. of Pa., 1924; U.N.C.	1924	1928
Pipes, David M., Greensboro; Tulane, 1934	1939	1940
Post, J. J., Greensboro; Columbia Univ., 1919	1925	1926
Prefontaine, J. E., Greensboro; Laval Univ. of Quebec, 1927	1931	1934
Ravenel, S. F., Greensboro; Johns Hopkins, 1923	1923	1926
Reaves, W. P., Greensboro (Hon.); Univ. of the South, 1903	1905	1907
Register, J. F., Greensboro; Med. Coll. of S. C., 1931	1936	1937

Name and Address	*Licensed*	*Joined State Society*
Reitzel, Claude E., High Point (Hon.); Coll. of P. & S., Atlanta, 1902	1902	1902
Rhudy, Booker E., Greensboro; Med. Coll. of Va., 1916	1926	1927
Saunders, S. Stewart, High Point; Harvard Univ., 1924	1926	1927
Schoonover, R. A., Greensboro; Balt. Med. Coll., 1905	1912	1912
Shelburne, P. A., Greensboro; Univ. of Va., 1927	1928	1928
Shohan, Joseph, Greensboro; Coll. of P. & S., Balt., 1901	1914	1923
Sikes, C. Henry, Greensboro; Jeff. Med. Coll., 1931	1933	1934
Siske, Grady C., Pleasant Garden; Chicago Med. Coll., 1936	1937	1938
Slate, J. W., High Point; Univ. Coll. of Med., 1900	1899	1925
Slate, M. L., High Point; Univ. of Md., 1931	1931	1934
Smith, Alick T., Greensboro; Med. Coll. of Va., 1908	1910	1913
Smith, O. Norris, Greensboro; Univ. of Pa., 1933	1938	1938
Stanton, D. A., High Point (Hon.); Vanderbilt Univ., 1887	1887	1891
Starr, H. F., Greensboro; Jeff. Med. Coll., 1916; U.N.C.	1916	1917
Strickland, H. G., Greensboro; Univ. of Md., 1930; U.N.C.	1930	1937
Sumner, Emmett A., High Point; Baylor Univ., 1925	1926	1927
Tankersley, J. W., Greensboro (Hon.); Jeff. Med. Coll., 1906; U.N.C.	1906	1906
Taylor, F. R., High Point; Univ. of Pa., 1913	1913	1915
Taylor, James N., Greensboro (Hon.); Med. Coll. of Va., 1901	1902	1905
Taylor, James T., Greensboro (Hon.); Univ. of Md., Coll. of P. & S., Balt., 1908	1908	1910
Taylor, S. R., Greensboro, Univ. of Pa., 1921; U.N.C.	1921	1924
Taylor, Wesley, Greensboro; Univ. of Mich., 1899	1925	1926
Thelen, Christien, Greensboro; Med. Coll. of Va., 1937	1939	1940
Thomas, J. G., Greensboro; Med. Coll. of Va., 1915	1915	1920
Thompson, C. D., High Point (Hon.); Univ. of Tenn., 1901	1901	1904
Warwick, H. C., Greensboro; Med. Coll. of Va., 1934	1934	1936
Whittington, Claude T., Greensboro; Univ. of Md., 1927	1927	1929
Williams, John D., Guilford Station (Hon.); Vanderbilt Univ., 1898	1898	1898
Williams, John D., Jr., Stokesdale; Temple Univ., 1930	1931	1935
Wolfe, H. C., Greensboro; Med. Coll. of Va., 1917	1917	1920
Wolff, D. R., Greensboro; Jeff. Med. Coll., 1918; U.N.C.	1918	1920
Wood, Geo. T., High Point; Jeff. Med. Coll., 1928; U.N.C.	1928	1935
York, Alexander Arthur, High Point (Hon.); Chattanooga Med. Coll., 1907	1907	1908

HALIFAX COUNTY MEDICAL SOCIETY

President: White, Francis Willard Moody, Halifax; Med. Coll. of Va., 1924; Wake Forest, 1921	1924	1924
Secretary: Young, Robert F., Weldon; Emory Univ., 1937	1939	1940
Beckwith, R. P., Roanoke Rapids; Univ. of Pa., 1911	1913	1916
Broun, Matthew S., Roanoke Rapids; Columbia Coll. of P. & S., 1919	1922	1923
Covington, J. M. C., Roanoke Rapids; Univ. of Va., 1929	1930	1933
Higginbotham, Upshur, Roanoke Rapids; Med. Coll. of Va., 1933	1937	1937
Jarman, F. G., Roanoke Rapids; Univ. Coll. of Med., 1911	1914	1916
Joyner, P. W., Enfield; Syracuse Univ., 1932; Wake Forest, 1930	1932	1935
Justis, L. H., Littleton; Med. Coll. of Va., 1916	1920	1920
Lassiter, H. G., Weldon; Jeff. Med. Coll., 1918; U.N.C.	1918	1920
Long, T. W. M., Roanoke Rapids (Hon.); Univ. Coll. of Med., 1908; U. N. C.	1909	1910
Maddrey, M. Crocker, Roanoke Rapids; Jeff. Med. Coll., 1931; Wake Forest	1931	1937
Martin, J. W., Roanoke Rapids; Med. Coll. of Va., 1916	1919	1920
McDowell, W. K., Scotland Neck; Jeff. Med. Coll., 1931	1931	1934
Neville, C. H., Scotland Neck; Tulane, 1927	1927	1928
Nicholson, B. M., Enfield; Univ. Coll. of Med., 1910	1910	1912
Palmer, Horace, Littleton; Atlanta School of Med., 1912	1912	1920
Pollock, David, Halifax; Med. Coll. of Va., 1935	1936	1937
Robertson, C. B., Jackson; Med. Coll. of Va., 1933	1934	1938
Smith, O. F., Scotland Neck (Hon.); Univ. Coll. of Med., 1899; U.N.C.	1899	1904
Stephenson, Bennett E., Roanoke Rapids; Med. Coll. of Va., 1935	1935	1937
Suiter, W. G., Weldon; Med. Coll. of Va., 1917	1917	1920
Taylor, Thos. Jefferson, Roanoke Rapids; Jeff. Med. Coll., 1934	1934	1937
Thigpen, H. G., Scotland Neck; Jeff. Med. Coll., 1917; U.N.C.	1917	1920
Weathers, Bahnson, Roanoke Rapids; Washington Univ., 1917	1921	1922

HARNETT COUNTY SOCIETY

President:		
Secretary: Hunter, W. B., Lillington; Univ. of Pa., 1911	1913	1920
Byrd, W. C., Angier; Jeff. Med. Coll., 1923; Wake Forest, 1921	1923	1937
Corbett, Clarence Lee, Dunn; Emory Univ., 1927	1927	1928
Doffermyre, L. R., Erwin; Temple Univ., 1938	1938	1939
Fleming, Fred H., Coats; Tulane, 1930; Wake Forest, 1928	1930	1933

Name and Address	*Licensed*	*Joined State Society*
Halford, Jos. W., Lillington (Hon.); Geo. Washington Univ., 1904	1905	1905
Holt, Wm. P., Sr., Erwin (Hon.); Jeff. Med. Coll., 1895	1895	1901
Martin, J. F., Dunn (Hon.); N. C. Med. Coll., 1905	1905	1918
McKay, Joseph F., Buies Creek (Hon.); S. C. Med. Coll., 1884	1885	1900
O'Dell, J. W., Dunn; Univ. of Ga., 1926	1928	1929
Parker, Paul G., Erwin; Med. Coll. of Va., 1916	1916	1917
Stanfield, W. W., Dunn; Med. Coll. of Va., 1932	1932	1940
Wyatt, A. T., Lillington; Jeff. Med. Coll., 1919	1919	1927

HAYWOOD COUNTY SOCIETY

President: Roberson, Robert S., Waynesville; Med. Coll. of Va., 1930; Wake Forest, 1927	1930	1932
Secretary: Moore, Roy H., Canton; Washington Univ., 1931; U.N.C.	1931	1934
Duckett, V. H., Canton; Univ. of Pa., 1930; Wake Forest, 1928	1930	1932
Johnson, W. C., Canton; Tulane, 1912; U.N.C.	1912	1914
Kirkpatrick, W. L., Waynesville; Vanderbilt Univ., 1894	1894	1895
Lancaster, N. F., Waynesville; Med. Coll. of Va., 1931	1932	1933
McCracken, J. R., Waynesville (Hon.); N. C. Med. Coll., 1902	1902	1903
Owen, C. F., Jr., Canton; Univ. of Pa., 1937	1937	1940
Owen, M. L., Canton; Univ. of Pa., 1932	1932	1936
Owen, Robert H., Canton; Univ. of Pa., 1931; Wake Forest, 1929	1931	1935
Osborne, Gladys H., Waynesville; Vanderbilt Univ., 1932	1935	1936
Pate, J. F., Canton; Med. Coll. of S. C., 1927	1927	1929
Reeves, J. L., Canton; Vanderbilt Univ., 1913	1913	1917
Russell, Jesse M., Canton; Univ. of Nashville, 1911	1911	1912
Sisk, C. N., Waynesville; Univ. of Nashville, 1905	1922	1923
Smith, D. W., Waynesville; Harvard Univ., 1931	1935	1936
Stretcher, R. H., Waynesville; Rush Med. Coll., 1927	1927	1930
Stringfield, Samuel L., Waynesville (Hon.); Jeff. Med. Coll., 1905	1905	1906
Stringfield, Thomas, Waynesville (Hon.); Vanderbilt Univ., 1898; U. N. C.	1898	1899
Stringfield, Thomas, Jr., Waynesville; Univ. of S. C., 1934; U.N.C.	1934	1937
Westmoreland, J. R., Canton; Washington Univ., 1932; U.N.C.	1932	1934

HENDERSON COUNTY SOCIETY

President: Kirk, W. R., Hendersonville (Hon.); Central Univ., 1891	1901	1903
Secretary: King, D. I. Campbell, Hendersonville; S. C. Med. Coll., 1935	1936	1937
Allen, Walter O., Hendersonville; Med. Coll. of S. C., 1925	1926	1927
Brown, J. S., Jr., Hendersonville; Tulane, 1925	1926	1927
Brown, J. S., Sr., Hendersonville (Hon.); Northwestern Univ., 1893	1894	1895
Dixon, Guy E., Hendersonville (Hon.); Coll. of P. & S., St. Louis, 1903	1903	1903
Fauntleroy, Jas. W., Zirconia; Coll. of P. & S., Columbia, 1896	1900	1929
McDonald, Lester P., Hendersonville; Jeff. Med. Coll., 1934	1934	1935
Pay, W. C., Hendersonville	——	1940
Salley, E. McQueen, Hendersonville (Hon.); Univ. of Md., 1905	1905	1906

HERTFORD COUNTY SOCIETY

Futrell, L. M., Murfreesboro; Med. Coll. of Va., 1914	1914	1918
Mitchell, Paul H., Ahoskie (Hon.); Univ. Coll. of Med., 1907	1907	1908

HOKE COUNTY SOCIETY

President: Easom, H. F., Sanatorium; Washington Univ., 1927	1927	1929
Secretary: Murray, R. L., Raeford; Univ. of Md., 1923	1923	1925
Brown, G. W., Raeford (Hon.) Ky. School of Med., 1898	1900	1900
Godwin, G. C., Sanatorium; Med. Coll. of Va., 1915	1915	1917
Gray, C. L., Sanatorium; Duke Univ., 1937	1937	1940
Harper, F. T., Jr., Sanatorium; Med. Coll. of Va., 1934; U.N.C.	1934	1936
Matheson, R. A., Raeford; Jeff. Med. Coll., 1926	1926	1928
McCain, P. P., Sanatorium; Univ. of Md., Coll. of P. & S., Balt, 1911	1914	1917
Skeen, L. B., Sanatorium; Univ. of Md., 1935; U.N.C.	1935	1936
Thomas, C. D., Sanatorium; Univ. of Ind., 1926	1930	1930

HYDE COUNTY SOCIETY

IREDELL-ALEXANDER COUNTY SOCIETY

President: Hinson, Angus, Statesville; Univ. of Va., 1931	1935	1936
Secretary: Fleming, Frank R., Statesvlle; Jeff. Med. Coll., 1935	1935	1937
Bell, A. E., Mooresville (Hon.); Univ. of Md.; Coll. of P. & S., 1897	1897	1904
Clayton, M. B., Statesville; Univ. of Louisville, 1917	1933	1935
Crouch, T. D., Stony Point; Univ. of Md., 1910; N. C. Med. Coll., 1909	1909	1915
Davis, Jas. W., Statesville; Univ. of Pa., 1913; U.N.C.	1913	1915
Gibson, L. O., Statesville; N. C. Med. Coll., 1913	1913	1915
Goode, T. V., Statesville; Univ. Coll. of Med., 1912	1912	1916

Name and Address	*Licensed*	*Joined State Society*
Herman, Chas. B., Statesville; Jeff. Med. Coll., 1923; U.N.C.	1923	1925
Holbrook, J. Samuel, Statesville; Univ. of Pa., 1932; Wake Forest	1932	1934
Little, Lonnie M., Statesville; Jeff. Med. Coll., 1925; U.N.C.	1925	1927
McElwee, Ross S., Statesville (Hon.); Univ. of Md., 1909	1909	1910
McLaughlin, J. E., Statesville (Hon.); Univ. of Md., 1886	1886	1896
McLelland, W. D., Mooresville; Jeff. Med. Coll., 1913	1913	1917
Myers, D. L., Harmony; Tulane, 1925; U.N.C.	1928	1929
Pressley, Jas. L., Statesville; Jeff. Med. Coll., 1925	1925	1928
Rhyne, S. A., Statesville; N. C. Med. Coll., 1915	1915	1920
Robertson, J. M., Harmony; Temple Univ., 1932	1932	1934
Sharpe, Frank L., Statesville (Hon.); Univ. of N. C., 1904	1904	1905
Shaw, L. R., Statesville; Med. Coll. of Va., 1930; Wake Forest, 1928	1930	1931
Sloan, A. B., Mooresville: Med. Coll. of Va., 1924	1924	1926
Talley, J. S., Troutman; Univ. of N C., 1909	1910	1917
Tatum, Roy C., Fort Bragg; Jeff. Med. Coll., 1919; Wake Forest, 1916	1919	1922
Taylor, G. W., Mooresville (Hon.); N. C. Med. Coll., 1906	1906	1907
Templeton, J. Y., Mooresville; Jeff. Med. Coll., 1912	1913	1927
Thurston, Asa, Taylorsville; Univ. of Md., 1909	1909	1914
Wrenn, Creighton, Mooresville; Tulane, 1935	1936	1938

JACKSON COUNTY SOCIETY

Nichols, Alvin A., Sylva (Hon.); Univ. of Nashville, 1898	1904	1904

JOHNSTON COUNTY SOCIETY

President: Wharton, Watson, Smithfield; La. State Univ., 1937	1937	1937
Secretary: Lassiter, Will H., Selma; Med. Coll. of Va., 1938	1938	1939
Aycock, F. M., Princeton; Med. Coll. of Va., 1921	1921	1926
Booker, Edwin N., Selma: Univ. of Va., 1925	1925	1930
Brooks, H. E., Clayton: Med. Coll. of Va., 1917	1917	1923
Bunn, J. H., Smithfield; Univ. of Md., 1936	1936	1938
Davidian, Vartan A., Smithfield; Kiev Univ., Russia, 1919	1919	1930
Duncan, S. A., Benson: Tulane, 1924; Wake Forest, 1921	1924	1925
Eldridge, Harvey A., Benson: Med. Coll. of Va., 1934	1934	1936
Fitzgerald, J. Herbert, Smithfield: Jeff. Med. Coll., 1920; U.N.C.	1920	1922
Grady, Jas. C., Kenly (Hon.); Balt. Univ., 1887	1887	1890
Hinnant, Milford, Micro: Univ. of Md., 1912	1912	1913
Hocutt, Battle A., Clayton (Hon.); Univ. of N. C., 1906	1906	1906
Jackson, M. V., Princeton: Univ. of Md., 1930	1930	1937
Lineberry, J. A., Four Oaks; Univ. of Md., 1937	1939	1940
McLemore, Geo. A., Smithfield (Hon.): Univ. of N. C., 1906	1906	1906
Parker, G. E., Benson (Hon.): Coll. of P. & S., Balt., 1886	1889	1904
Rose, A. M., Smithfield (Hon.); Jeff. Med. Coll., 1906	1906	1906
Sox, Carl C., Kenly; Geo. Washington Univ., 1932	1932	1936
Stanley, John H., Four Oaks (Hon.); Johns Hopkins, 1904; U.N.C.	1904	1906
Upchurch, T. G., Smithfield: Duke Univ., 1932; U.N.C.	1932	1935
Utley, H. H., Benson (Hon.); Balt. Med. Coll., 1906	1906	1907
Vick, Geo. D., Selma (Hon.): Jeff. Med. Coll., 1906	1906	1907
Wilson, W. G., Smithfield; Jeff. Med. Coll., 1921	1921	1924
Woodard, B. L., Kenly; Univ. of Md., 1933; U.N.C.	1933	1935

JONES COUNTY SOCIETY

LEE COUNTY SOCIETY

President: Byerly, J. H., Sanford; Northwestern Univ., 1935	1936	1938
Secretary: Blue, Waylon, Jonesboro; Med. Coll. of Va., 1925	1925	1926
Chiles, Geo. C., Sanford; Med. Coll. of Va., 1926	1928	1928
Foster, J. F., Sanford; N. C. Med. Coll., 1916	1916	1919
James, Arthur A., Jr., Sanford: Univ. of Pa., 1932; U.N.C.	1932	1936
Knight, Floyd L., Sanford; Univ. of Va., 1924	1925	1926
Lutterloch, I. Hadyen, Jr., Sanford; Jeff. Med. Coll., 1921; U.N.C.	1921	1924
Matthews, M. L., Sanford (Hon.); Univ. of N. C., 1903	1903	1904
Melver, Lynn; Sanford (Hon.); Univ. of Ky., 1901; U.N.C.	1902	1902
Patterson, J. H., Broadway; Med. Coll. of Va., 1932	1932	1934

LENOIR COUNTY SOCIETY

President: Sabiston, Frank, Kinston; Univ. of Md., 1918; U.N.C.	1919	1926
Secretary: Fuller, Henry Fleming, Kinston; Univ. of Pa., 1936	1936	1939
Boney, Elwood R., Kinston; Univ. of Pa., 1926; U.N.C.	1926	1928
Carr, M. L., La Grange; Med. Coll. of Va., 1916	1916	1920
Cranz, Oscar W., Kinston; Med. Coll. of Va., 1931	1934	1936
Davis, Rachel D., Kinston; Women's Med. Coll. of Pa., 1932	1933	1934
Emerich, Paul, Kinston; Univ. of Louisville, 1935	1935	1940
Hardy, Ira M., Kinston (Hon.); Med. Coll. of Va., 1901; U.N.C.	1902	1902

Name and Address	*Licensed*	*Joined State Society*
Keiter, W. Eugene, Kinston; Washington Univ., 1931	1935	1935
Lee, Mike, Kinston; Tulane, 1926; Wake Forest, 1924	1926	1927
Lee, Thos. L., Kinston; Med. Coll. of Va., 1926	1926	1927
Moseley, Z. V., Kinston; Univ. Coll. of Med., 1913	1913	1914
Oehlbeck, L. W., Kinston; Univ. of Rochester, 1930	1939	1939
Offutt, Vernon D., Kinston; Med. Coll. of Va., 1933	1935	1940
Parrott, M. C., Kinston; Tulane, 1917; U.N.C.	1917	1919
Parrott, Wm. T., Kinston (Hon.); Tulane, 1897	1899	1901
Peery, Vance P., Kinston; Med. Coll. of Va., 1916	1917	1917
Prichard, R. W., Kinston; Georgetown, 1938	1938	1940
Temple, R. Henry, Kinston; Univ. of Pa., 1936	1936	1938
Turrentine, Kilby P., Kinston; Rush Med. Coll., 1931; U.N.C.	1932	1933
Tyndall, R. G. Kinston; Univ. of Pa., 1928; Wake Forest, 1926	1928	1931
West, B. C., Kinston; Univ. of Pa., 1924; U.N.C.	1924	1926
West, C. F., Kinston; Univ. of Pa., 1917; U.N.C.	1917	1920
Whitaker, Paul F., Kinston; Med. Coll. of Va., 1922; U.N.C.	1922	1924
Wooten, Floyd P., Kinston; Jeff. Med. Coll., 1920	1920	1923

LINCOLN COUNTY SOCIETY

President: Gamble, J. F., Lincolnton; Univ. of Tenn., 1903	1915	1919
Secretary: Wilson, S. A., Lincolnton; Emory Univ., 1937	1937	1940
Bandy, W. G., Lincolnton; Vanderbilt Univ., 1908	1912	1914
Cornwell, A. M., Lincolnton; Geo. Washington Univ., 1927	1927	1928
Costner, W. V., Lincolnton; Jeff. Med. Coll., 1924; U.N.C.	1925	1927
Crowell, L. A., Jr., Lincolnton; Tulane, 1930; U.N.C.	1930	1930
Crowell, L. A., Sr., Lincolnton (Hon.); Balt. Med. Coll., 1892	1892	1898
Edwards, Forrest D., Lawndale; Atlanta Med. Coll., 1914	1916	1919
Elliott, W. F., Lincolnton; Pa. Medico-Chir. Coll., 1916; U.N.C.	1916	1917
Gamble, J. R., Lincolnton; Univ. of Tenn., 1911	1911	1912
Hoover, C. H., Crouse (Hon.); Balt. Med. Coll., 1903; Chattanooga Med. Coll., 1900	1903	1903

MACON-CLAY COUNTIES SOCIETY

Killian, Frank M., Franklin; Univ. of Louisville, 1929	1929	1930
Rogers, W. A., Franklin (Hon.); Univ. of Nashville, 1898	1898	1898

MADISON COUNTY SOCIETY

MARTIN-WASHINGTON-TYRELL COUNTIES SOCIETY

President:		
Secretary: Williams, John W., Williamston; Univ. of Md., 1906; U. N. C.	1906	1906
Bray, T. L., Plymouth; Univ. of Md., 1916	1916	1919
Lewis, S. V., Plymouth; Med. Coll. of Va., 1916	1916	1923
McAllister, Russell, Williamston; Med. Coll. of Va., 1937	1938	1939
Nelson, Robert J., Robersonville (Hon.); Louisville Med. Coll., 1890	1890	1898
Pittman, E. E., Oak City; Med. Coll. of Va., 1919	1919	1920
Rhodes, James S., Williamston (Hon.); Med. Coll. of Va., 1906	1906	1907
Saunders, Jos. H., Williamston (Hon.); Univ. Coll. of Med., 1905; U. N. C.	1905	1906
Walker, E. T., Williamston; Univ. of Kansas, 1937	1939	1940
Ward, Jesse E., Robersonville (Hon.); Univ. of Md., 1904; U.N.C.	1904	1905
Ward, Vernon Albert; Robersonville; Jeff. Med. Coll., 1908; U.N.C.	1908	1914

McDOWELL COUNTY SOCIETY

President: McIntosh, D. M., Jr., Marion; Univ. of Pa., 1933	1935	1936
Secretary: Hagna, L. W., Marion; Univ. of Pa., 1936	1938	1940
Ashworth, B. L., Marion (Hon.); Coll. of P. & S., Balt., 1893	1893	1900
Butt, R. B., Marion; Emory Univ., 1920	1920	1921
Johnson, John B., Old Fort; Univ. of Louisville, 1905	1914	1914
Jonas, John F., Marion (Hon.); Balt. Med. Coll., 1903	1903	1903
Justice, Gaston B., Marion (Hon.); Coll. of P. & S., Atlanta, 1907; U. N. C.	1907	1908
Kirby, Guy S., Marion (Hon.); Univ. Coll. of Med., 1897	1896	1903
McBee, Paul, Marion; Med. Coll. of Va., 1930; Wake Forest, 1928	1930	1933
McIntosh, D. M., Old Fort (Hon.); Med. Coll. of Va., 1904	1907	1908
Miller, J. F., Marion; Med. Chi., Phila., 1906	1915	1919
Wood, Frank, Marion; Univ. of Pa., 1928; U.N.C.	1931	1932
Wood, Martha, Marion; Univ. of Pa., 1928; U.N.C.	1934	1935

MECKLENBURG COUNTY SOCIETY

President: Ferguson, R. T., Charlotte; Univ. Coll. of Med., 1906	1909	1922
Secretary: Taylor, Andrew D., Charlotte; Univ. of Md., 1934	1934	1937

Name and Address	*Licensed*	*Joined State Society*
Abernathy, H. N., Charlotte (Hon.); Louisville Med. Coll., 1894	1894	1899
Adams, James R., Charlotte; Univ. of Va., 1928	1932	1933
Alexander, J. M., Charlotte; McGill Univ., 1934	1934	1937
Alexander, James R., Charlotte (Hon.); Univ. of Md., 1894	1894	1899
Allan, William, Charlotte (Hon.); Coll. of P. & S., Balt., 1906	1906	1908
Ashe, J. R., Charlotte; Columbia Univ., 1911	1915	1915
Austin, D. R., Charlotte; Jeff. Med. Coll., 1917; U.N.C.	1917	1919
Austin, Frederick D., Jr., Charlotte; Vanderbilt Univ., 1937	1937	1939
Baker, T. W., Charlotte; Univ. of Pa., 1931	1931	1938
Barret, Harvey P., Charlotte; Univ. of Louisville, 1908	1917	1919
Barron, A. A., Charlotte; Vanderbilt Univ., 1909	1910	1911
Baxter, Oscar Dixon, Charlotte; Jeff. Med. Coll., 1924	1924	1929
Black, Geo. William, Charlotte; Med. Coll. of Va., 1924	1924	1925
Blair, Andrew, Charlotte; Univ. of Pa., 1924	1925	1926
Bost, T. C., Charlotte; Geo. Washington Univ., 1915	1920	1921
Bradford, W. B., Charlotte; Univ. of Pa., 1932	1932	1937
Bradford, W. Z., Charlotte; Univ. of Pa., 1928	1928	1930
Brantley, Thos. H., Charlotte; Med. Coll. State of S. C., 1936	1936	1939
Brenizer, A. G., Charlotte; Johns Hopkins, 1908; Univ. of Heidelberg	1911	1911
Britt, C. S., Charlotte; Emory Univ., 1920	1925	1926
Bunch, Charles, Charlotte; Univ. of S. C., 1931	1931	1935
Choate, A. B., Charlotte; Med. Coll. of Va., 1929	1929	1933
Cornell, W. S., Charlotte; Emory Univ., 1931	1938	1938
Craven, Thomas W., Huntersville; Jeff. Med. Coll., 1917; U.N.C.	1917	1919
Craven, W. W., Charlotte, Univ. of Md., 1903; U.N.C.	1904	1911
Daniel, Walter E., Charlotte; Med. Coll. of Va., 1931	1938	1938
De Armon, J. McC., Charlotte (Hon.); Univ. of Md., 1886	1886	1887
Donnelly, Jno., Charlotte; Univ. of N. C., 1905	1905	1919
Elliott, J. A., Charlotte; Univ. of Mich., 1914	1919	1920
Faison, Elias, Charlotte; Emory Univ., 1929	1929	1933
Fleming, L. E., Charlotte; Univ. of Pa., 1931; Wake Forest, 1929	1931	1934
Franklin, Ernest W., Charlotte; Univ. of Pa., 1930; U. N. C.	1930	1932
Gage, L. G., Charlotte; Univ. of Va., 1915	1921	1922
Gallant, Robert M., Charlotte; N. C. Med. Coll., 1915	1915	1916
Gaul, John Stuart, Charlotte; Medico-Chiru., Phila., 1913	1922	1923
Gay, Charles H., Charlotte; Duke Univ., 1933	1936	1938
Gibbon, James W., Charlotte; Jeff. Med. Coll., 1918	1920	1921
Gibbon, Robert L., Charlotte (Hon.); Jeff. Med. Coll., 1887	1887	1888
Hamer, Jerome B., Charlotte; Univ. of Ga., 1938	1938	1940
Hamer, W. A., Charlotte; Univ. of Md., 1930; Wake Forest, 1928	1930	1932
Hand, Edgar H., Charlotte; N. C. Med. Coll., 1907	1907	1913
Hart, V. K., Charlotte; Univ. of Pa., 1921	1924	1925
Hawes, Aubrey, Charlotte; Vanderbilt Univ., 1933	1939	1939
Hipp, Edw. R., Charlotte; Univ. of Va., 1918	1920	1921
Houser, O. J., Charlotte; N. C. Med. Coll., 1914	1914	1916
Hovis, L. W., Charlotte (Hon.); N. C. Med. Coll., 1904; U.N.C.	1904	1906
Hunt, J. S., Charlotte; Vanderbilt Univ., 1929	1932	1933
Hunter, W. Myers, Charlotte (Hon.); Georgetown Univ., 1905	1906	1906
Jacobs, J. E., Charlotte; Univ. of Nebraska, 1935	1939	1940
Johnston, J. G., Charlotte; Vanderbilt Univ., 1899	1913	1916
Jones, O. H., Charlotte; Columbia Univ., 1933	1933	1937
Kelly, Luther W., Charlotte; Univ., of Va., 1924	1926	1927
Kennedy, John P., Charlotte; Jeff. Med. Coll., 1915	1915	1920
King, Parks M., Charlotte (Hon.); Bellevue Med. Coll., 1902	1902	1904
Lafferty, Robert H., Charlotte (Hon.); N. C. Med. Coll., 1906	1906	1906
Leinbach, Robert F., Charlotte (Hon.); Univ. of Pa., 1907; U.N.C.	1907	1910
MacConnell, John W., Davidson (Hon.); Univ. of Md., 1907	1908	1909
Martin, Wm. F., Charlotte; Univ. of Md., 1920	1920	1923
Martin, W. J., Davidson; Univ. of Va., 1890	1891	1919
Massey, C. C., Charlotte; Jeff. Med. Coll., 1923; U.N.C.	1923	1925
Mathews, Vann M., Charlotte; Univ. of Pa., 1918	1918	1921
Matthews, Wm. C., Davidson; Univ. of Va., 1937	1939	1939
Maulden, Paul R., Kannapolis; N. Y. Univ., 1932; U.N.C.	1932	1934
Mayer, Walter B., Charlotte; Univ. of Pa., 1930	1932	1933
McCoy, Thos. M., Charlotte (Hon.); N. C. Med. Coll., 1905	1906	1906
McDonald, A. M., Charlotte; Univ. of Pa., 1928; U.N.C.	1935	1937
McKay, Hamilton W., Charlotte; Jeff. Med. Coll., 1910; N. C. Med. Coll., 1909	1911	1913
McKay, Robert W., Charlotte; Johns Hopkins, 1923	1928	1928
McKnight, R. B., Charlotte; Univ. of Pa., 1920; U.N.C.	1920	1928
McLaughlin, C. S., Charlotte (Hon.); Univ. of Md., 1896	1896	1903
McLaughlin, C. S., Jr., Charlotte; Univ. of Tenn., 1935	1937	1937
McLean, E. K., Charlotte; Univ. of Texas, 1919	1927	1928
McLesky, J. H., Charlotte; Univ. of Ga., 1909	1927	1928

Name and Address	*Licensed*	*Joined State Society*
McPhail, L. D., Charlotte (Hon.); Univ. of Md., 1900; U.N.C.	1900	1902
Miller, Oscar L., Charlotte; Coll. of P. & S., Atlanta, 1912	1921	1922
Montgomery, J. C., Charlotte; Univ. of Pa., 1932	1935	1936
Moore, Alexander W., Charlotte; Bellevue Med. Coll., 1902; Univ. of Va., 1901	1912	1913
Moore, Oren, Charlotte; N. C. Med. Coll., 1911	1911	1912
Moore, R. A., Charlotte; Univ. of Pa., 1923	1924	1925
Motley, Fred Elliott, Charlotte; Univ. of Mich., 1922	1926	1927
Munroe, H. Stokes, Charlotte (Hon.); N. C. Med. Coll., 1902; Jeff. Med. Coll., 1903	1902	1904
Munroe, H. Stokes, Jr., Charlotte; Duke Univ., 1935	1937	1940
Munroe, J. P., Charlotte (Hon.); Univ. of Va., 1885	1886	1890
Myers, Alonzo, Charlotte; Bellevue Med. Coll., 1916; N. C. Med. Coll., 1911	1911	1920
Myers, John Q., Charlotte (Hon.); N. C. Med. Coll., 1904	1904	1904
Nalle, B. C., Charlotte (Hon.); Univ. of Va., 1903	1905	1905
Nance, C. L., Charlotte; N. C. Med. Coll., 1919	1921	1922
Naumoff, Philip, Charlotte; Duke Univ., 1937	1939	1939
Neblett, H. C., Charlotte; Med. Coll. of Va., 1914	1921	1929
Newell, Leon B., Charlotte (Hon.); Univ. of N. C., 1905	1905	1906
Newton, Howard L., Charlotte; Northwestern Univ., 1921	1923	1925
Nisbet, D. Heath, Charlotte; Harvard Univ., 1917	1917	1920
Northington, J. M., Charlotte (Hon.); Med. Coll. of Va., 1905	1909	1909
Nowlin, Preston, Charlotte; Univ. of Va., 1924	1929	1930
Peeler, Clarence N., Charlotte (Hon.); N. C. Med. Coll., 1906	1906	1908
Petteway, George H., Charlotte; N. C. Med. Coll., 1913	1913	1914
Pressly, Geo. W., Charlotte (Hon.); Jeff. Med. Coll., 1892	1895	1896
Query, R. Z., Jr., Charlotte; Duke Univ., 1934	1937	1938
Rankin, Watson S., Charlotte (Hon.); Univ. of Md., 1901	1901	1901
Ranson, J. Lester, Charlotte; N. C. Med. Coll., 1911	1911	1912
Ray, F. L., Charlotte; Univ. of Va., 1919; Wake Forest	1919	1922
Ray, W. Turner, Charlotte; Univ. of Md., 1934; Wake Forest, 1931	1934	1937
Reid, C. Graham, Charlotte; Univ. of Pa., 1935	1938	1939
Robinson, C. W., Charlotte; Univ. of Pa., 1930; U.N.C.	1930	1932
Ross, Otho B., Charlotte; Univ. of Pa., 1909; U.N.C.	1909	1912
Ross, T. W., Charlotte; Jeff. Med. Coll., 1927; U.N.C.	1927	1930
Sanger, P. W., Charlotte; Vanderbilt Univ., 1931	1937	1938
Scruggs, W. Marvin, Charlotte; Univ. of Pa., 1914; Wake Forest, 1912	1914	1920
Seay, Hillis L., Huntersville; Vanderbilt Univ., 1930	1933	1934
Selby, W. E., Charlotte; Temple Univ., 1934; U.N.C.	1934	1936
Shirley, H. C., Charlotte; Johns Hopkins, 1918	1921	1922
Shull, J. Rush, Charlotte; Univ. of Pa., 1910; U.N.C.	1910	1913
Sloan, H. L., Charlotte; Univ. of Pa., 1911	1913	1920
Smith, F. C., Charlotte; Jeff. Med. Coll., 1921; U.N.C.	1921	1925
Smith, Thos. A., Charlotte; N. C. Med. Coll., 1917	1917	1934
Sparrow, Thos. DeL., Charlotte; Univ. of Pa., 1920	1920	1923
Squires, Claude B., Charlotte; Jeff. Med. Coll., 1919	1919	1921
Summerville, W. M., Charlotte; Emory Univ., 1936; U.N.C.	1936	1937
Taylor, H. C., Charlotte; Tenn. Med., 1886	1910	1920
Teasdale, L. R., Charlotte; Dalhousie Univ., 1936	1936	1940
Thompson, S. R., Charlotte; N. C. Med. Coll., 1914	1914	1915
Todd, L. C., Charlotte; Univ. of Mich., 1918	1920	1920
Townsend, M. L., Society Hill, S. C.; Indiana Med. Coll., 1906	1912	1913
Tydeman, F. W. L., San Francisco, Cal.; N. C. Med. Coll., 1912	1912	1918
Wannamaker, Edward J., Jr., Charlotte; Univ. of Pa., 1921	1924	1924
Welton, David G., Charlotte; Univ. of Wisconsin, 1935	1939	1939
Whisnant, Albert M., Charlotte (Hon.); Coll. of P. & S., Balt., 1893	1893	1899
White, Thomas Preston, Charlotte; Univ. of Pa., 1922	1924	1925
Winkler, Harry, Charlotte; Rush Med. Coll., 1929	1931	1931
Wishart, Wm. E., Charlotte; N. C. Med. Coll., 1911	1911	1913

MITCHELL COUNTY SOCIETY

President:		
Secretary: Gouge, A. E., Bakersville; Med. Coll. of Va., 1917	1917	1920
McDuffie, James T., Spruce Pine; Coll. of Med. Evangelists, 1939	1939	1940
Peterson, C. A., Spruce Pine (Hon.); N. C. Med. Coll., 1907	1907	1908

MONTGOMERY COUNTY SOCIETY

Daligny, Charles, Troy (Hon.); Univ. of Paris, 1878	1889	1891
Ingram, Charles B., Mt. Gilead (Hon.); Jeff. Med. Coll., 1886	1886	1892
McMillan, J. M., Candor; Coll. of P. & S., Atlanta, 1909	1909	1911
Thompson, Alexander Frank, Troy (Hon.); Med. Coll. of Ind., 1895; U. N. C.	1895	1904

MOORE COUNTY SOCIETY

Name and Address	*Licensed*	*Joined State Society*
President:		
Secretary: Rosser, R. G., Vass; N. C. Med. Coll., 1909	1909	1911
Blue, A. McN., Carthage; Tulane, 1915	1916	1918
Bowen, J. P., Aberdeen; Univ. of Md., 1929	1932	1934
Bowman, H. E., Aberdeen (Hon.); N. C. Med. Coll., 1904	1904	1905
Chester, P. J., Southern Pines; N. C. Med. Coll., 1913	1913	1920
Felton, R. L., Jr., Carthage; Univ. of Pa., 1927; U.N.C.	1927	1930
Kemp, Malcolm Drake, Pinebluff; Washington Univ., 1930; U.N.C.	1930	1936
Marr, M. W., Pinehurst; Tufts, 1907	1909	1915
McLeod, A. H., Aberdeen (Hon.); Balt. Med. Coll., 1896; U.N.C.	1896	1904
McLeod, Vida C., Southern Pines; Baylor Univ., 1919	1931	1931
McLeod, Walter G., Southern Pines; Baylor Univ., 1921	1926	1927
Milliken, J. S., Southern Pines; Jeff. Med. Coll., 1915; U.N.C.	1915	1916
Monroe, C. R., Pinehurst; Univ. of Md., 1924; U.N.C.	1925	1930
Mudgett, W. C., Southern Pines (Hon.); Md. Med. Coll., 1903	1908	1908
Overcash, W. E., Southern Pines; Univ. of Pa., 1926; U.N.C.	1926	1934
Owens, Francis Leroy, Pinehurst; Duke Univ., 1934	1935	1938
Street, M. E., Glendon (Hon.); Coll. of P. & S., Balt., 1893	1893	1902
Symington, John, Carthage; Univ. of Md., 1902	1927	1928
Wilcox, J. W., West End (Hon.); Univ. of N. C., 1906	1906	1906

NASH—SEE EDGECOMBE-NASH

NEW HANOVER COUNTY SOCIETY

President: Koonce, Donald B., Wilmington; Univ. of Pa., 1929	1929	1934
Secretary: McEachern, Duncan R., Wilmington; Med. Coll. of Va., 1932; U.N.C.	1932	1935
Anderson, E. C., Wilmington; Northwestern Univ., 1937	1937	1939
Barefoot, Graham B., Wilmington; Jeff. Med. Coll., 1923; Wake Forest, 1921	1923	1924
Barefoot, Wm. Frederick, Wilmington; Tulane, 1934	1934	1935
Bellamy, Robert H., Wilmington (Hon.); Jeff. Med. Coll., 1902; U.N.C.	1902	1902
Black, Paul A. L., Wilmington; Coll. of Med. Evangelists, 1932	1935	1938
Bulluck, Ernest S., Wilmington; Univ. of Md., 1911	1911	1912
Codington, H. A., Wilmington; Univ. of Md., 1911	1915	1917
Cranmer, J. B., Wilmington (Hon.); Univ. of N. C., 1905	1905	1906
Crouch, A. McR., Wilmington; Jeff. Med. Coll., 1916; U.N.C.	1916	1918
Elliott, A. H., Wilmington; Jeff. Med. Coll., 1919; U.N.C.	1919	1921
Evans, J. E., Wilmington; Univ. of Md., 1916	1916	1921
Fales, Robert, Wilmington; Jeff. Med. Coll., 1932	1932	1936
Farthing, J. Watts, Wilmington; Univ. of Pa., 1933; Univ. of Miss., 1938	1938	1939
Fay, Oliver Frederick, Wilmington; Med. Coll. of Va., 1930	1934	1935
Freeman, Jere D., Wilmington; Med. Coll. of Va., 1918	1921	1922
Graham, Charles, Wilmington; Harvard Univ., 1932; U.N.C.	1932	1927
Hare, R. B., Wilmington; Med. Coll. of S. C., 1930	1933	1934
Harriss, Andrew H., Wilmington (Hon.); Med.-Chur. Coll., Phila., 1893	1892	1894
Hoggard, J. T., Wilmington; Univ. Coll. of Med., 1906	1906	1922
Hooper, Joseph W., Wilmington; Univ. of Md., 1909	1912	1917
Johnson, Geo. W., Wilmington; Univ. of Pa., 1920; U.N.C.	1920	1921
Koonce, S. Everett, Wilmington (Hon.); Coll. of P. & S., Balt., 1896	1896	1900
Lancaster, Wm. Jesse, Wilmington; Atlanta School of Med., 1911	1935	1935
Mebane, W. C., Jr., Wilmington; Univ. of Md., 1931; U.N.C.	1932	1934
Moore, W. Houston, Wilmington; Jeff. Med. Coll., 1910; U.N.C.	1910	1911
Murchison, D. R., Wilmington; Johns Hopkins, 1916	1922	1923
Robertson, James F., Wilmington; Univ. of Pa., 1913	1913	1916
Rodman, R. B., Wilmington; Med. Coll. of S. C., 1928	1928	1930
Rosenbaum, M. M., Shallotte; Univ. of Buffalo, 1934	1936	1937
Sidbury, J. B., Wilmington; Columbia Univ., 1912	1915	1916
Sloan, D. B., Wilmington; Univ. of Pa., 1914; U.N.C.	1914	1920
Stevens, H. W., Wilmington; Jeff. Med. Coll., 1938	1938	1940
Taylor, W. I., Burgaw (Hon.); N. C. Med. Coll., 1902	1904	1905
Wessell, John C., Wilmington (Hon.); Univ. of Md., 1900	1900	1900

NORTHAMPTON COUNTY SOCIETY

Lister, J. L., Jackson (Hon.); Med. Coll. of Va., 1896	1896	1909
Parker, Walter Raleigh, Jackson; Med. Coll. of Va., 1916	1916	1919

ONSLOW COUNTY SOCIETY

Henderson, John P., Jacksonville; Med. Coll. of Va., 1918	1919	1921
Kendall, John H., Richlands; Coll. of Med. Evangelists, 1934	1935	1935
Sutton, Carl W., Richlands (Hon.); Tulane, 1905; U.N.C.	1905	1907

ORANGE—SEE DURHAM-ORANGE

PAMLICO COUNTY SOCIETY

Name and Address	*Licensed*	*Joined State Society*
President: Dees, D. A., Bayboro (Hon.); Balt. Med. Coll., 1903	1903	1905
Secretary: Purdy, J. J., Oriental; Med. Coll. of Va., 1900	1914	1915
Daniels, O. C., Oriental (Hon.); Med. Coll. of Va., 1903; U.N.C.	1903	1903
McCotter, St. Elmo, Bayboro (Hon.); Coll. of P. & S., Atlanta, 1908	1908	1909

PASQUOTANK-CAMDEN-CURRITUCK-DARE COUNTIES SOCIETY

Bailey, M. H., Elizabeth City; Northwestern Univ., 1931	1933	1940
Fearing, Isaiah, Elizabeth City (Hon.); Coll. of P. & S., Balt, 1896	1896	1904
Gill, Jos. A., Elizabeth City; Syracuse Univ., 1932	1932	1936
Griggs, W. T., Poplar Branch (Hon.); Univ. of Va., 1896	1896	1901
Johnston, W. W., Manteo; N. C. Med. Coll., 1913	1913	1915
Owens, Z. D., Elizabeth City; Univ. of Md., 1930	1930	1940
Peters, W. A., Elizabeth City; Med. Coll. of Va., 1915	1915	1916
Sawyer, W. W., Elizabeth City (Hon.); Univ. of Md., 1903; U.N.C.	1903	1904
Walker, H. D., Elizabeth City (Hon.); Univ. of Md., 1902	1902	1902
White, W. H. C., Elizabeth City; Univ. of Va., 1922	1929	1930

PENDER COUNTY SOCIETY

PERQUIMANS—SEE CHOWAN-PERQUIMANS

PERSON COUNTY SOCIETY

President:		
Secretary: Allen, A. L., Roxboro; Med. Coll. of S. C., 1933	1934	1935
Beam, H. M., Roxboro; Columbia Univ., 1918; Wake Forest	1918	1919
Fitzgerald, J. D., Roxboro; Duke Univ., 1934	1934	1937
Gentry, Geo. W., Roxboro; Univ. of N. C., 1910; Wake Forest	1910	1911
Hedgpeth, E. M., Roxboro; Northwestern Univ., 1936; Wake Forest	1937	1938
Love, Bedford E., Roxboro (Hon.); Univ. of Md., 1904	1904	1905
Merritt, John H., Woodsdale (Hon.); Univ. of N. C., 1906	1907	1908
Nichols, Austin F., Roxboro (Hon.); Univ. of N. C., 1908	1908	1909
Thaxton, B. A., Roxboro; Jeff. Med. Coll., 1914	1914	1916

PITT COUNTY SOCIETY

President: Brown, W. M. B., Greenville; Med. Coll. of Va., 1929	1929	1931
Secretary: Aycock, E. Burtis, Greenville; McGill Univ., 1936	1936	1940
Armistead, D. B., Greenville; Med. Coll. of Va., 1931	1935	1936
Barrett, J. M., Greenville; Univ. of Pa., 1926; U.N.C.	1926	1928
Basnight, Thomas G., Stokes (Hon.); Univ. of Md., 1904; U.N.C.	1905	1907
Beasley, E. B., Fountain; Univ. of Pa., 1911; U.N.C.	1911	1915
Brooks, F. P., Greenville; Univ. of Mich., 1933; U.N.C.	1933	1935
Crisp, S. M., Greenville; Univ. of Pa., 1923; U.N.C.	1923	1926
Dixon, G. G., Ayden; Med. Coll. of Va., 1915; U.N.C.	1915	1917
Ennett, N. Thomas, Greenville; Med. Coll. of Va., 1907	1932	1934
Fitzgerald, Charles E., Farmville; La. State Univ., 1937	1937	1940
Frizzelle, M. T., Ayden (Hon.); Univ. Coll. of Med., 1907	1907	1908
Garrenton, Connell, Bethel; Univ. of Pa., 1935; Wake Forest, 1933	1935	1937
Haar, F. B. Greenville; Jeff. Med. Coll., 1932	1932	1935
Hammond, A. F., Grifton; Jeff. Med. Coll., 1934; U.N.C.	1934	1937
Hawes, J. D., Greenville; Univ. of Va., 1932	1937	1938
Liverman, J. S., Winterville; Med. Coll. of Va., 1930	1930	1934
Mewborn, J. M., Farmville; Med. Coll. of Va., 1932; U.N.C.	1932	1935
Moore, D. L., Winterville; Jeff. Med. Coll., 1936	1936	1938
Nobles, Jos. E., Greenville (Hon.); Jeff. Med. Coll., 1899; U.N.C.	1899	1902
Pace, K. B., Greenville; Jeff. Med. Coll., 1914; U.N.C.	1914	1920
Skinner, Louis Cotton, Greenville (Hon.); Univ. of Md.	1901	1903
Taylor, Chas. W., Kings Park, N. Y.; Med. Coll. of Va., 1933	1933	1935
Tucker, Earl Van, Grifton; Med. Coll. of Va., 1930; U.N.C.	1930	1935
Ward, Needham E., Greenville; Duke Univ., 1932; U.N.C.	1934	1934
Watson, Thomas M., Greenville; Tulane, 1919; Wake Forest	1919	1920
Winstead, J. L., Greenville; Univ. of Md., 1925; U.N.C.	1925	1930

POLK COUNTY SOCIETY

President: Palmer, M. C., Tryon; Med. Coll. of S. C., 1910; U.N.C.	1911	1914
Secretary: Woody, Austin, Tryon; Univ. of Pa., 1937	1939	1940
Grady, Wm. Earle, Tryon (Hon.); Univ. of Md., Coll. of P. & S., Balt., 1894	1895	1899
Jervey, A. J., Tryon; Med. Coll. of S. C., 1905	1923	1926
Preston, John Z., Tryon; Temple Univ., 1934	1935	1937
Smith, D. L., Saluda; Med. Coll. of S. C., 1903	1926	1927

RANDOLPH COUNTY SOCIETY

Name and Address	*Licensed*	*Joined State Society*
President: Barnes, Dempsey, Asheboro; Med. Coll. of Va., 1925	1925	1927
Secretary: Soady, J. H., Asheboro; McGill Univ., 1903; Toronto Univ., 1905	1924	1926
Barnes, J. T., Asheboro; Med. Coll. of Va., 1929	1929	1932
Barnes, Tiffany, Asheboro; Med. Coll. of Va., 1925; Wake Forest, 1923	1925	1927
Fritz, J. L., Asheboro; Temple Univ., 1936; U.N.C.	1936	1938
Griffin, H. L., Asheboro; Med. Coll. of Va., 1926	1926	1928
Hubbard, Charles C., Farmer (Hon.); Jeff. Med. Coll., 1888	1890	1900
Johnson, J. R., Richwood, W. Va.; Med. Coll. of Va., 1927; Wake Wake Forest, 1925	1927	1929
Joyner, Geo. W., Asheboro; Duke Univ., 1932	1937	1938
Redding, Alex. H., Cedar Falls (Hon.); Coll. of P. & S., Balt., 1887	1889	1900
Smith, M. B., Ramseur; Univ. of Pa., 1938	1938	1940
Sumner, G. H., Asheboro; Tulane, 1923; U.N.C.	1923	1924
Sykes, R. P., Asheboro; Tulane, 1929	1929	1931

RICHMOND COUNTY SOCIETY

President: Howell, W. L., Ellerbe; N. C. Med. Coll., 1910	1910	1912
Secretary: Henry, T. Boyce, Rockingham; Columbia Univ., Coll. of P. & S., N. Y., 1917; U.N.C.	1920	1921
Bardin, R. M., Rockingham; Tulane, 1929	1934	1935
Bristow, C. O., Rockingham; Jeff. Med. Coll., 1918	1920	1921
Caddell, G. C., Hoffman; N. C. Med. Coll., 1912	1912	1930
Garrett, F. B., Rockingham; N. C. Med. Coll., 1912	1912	1914
Garrison, R. B., Hamlet; Univ. of Md., 1933; U.N.C.	1933	1935
James, W. D., Hamlet (Hon.); Jeff. Med. Coll., 1908; U.N.C.	1908	1910
Kinsman, Henry F., Hamlet (Hon.); Univ. of Vermont, 1894	1897	1904
Ledbetter, James McQ., Rockingham (Hon.); Vanderbilt Univ., 1894; U. N. C.	1894	1903
Long, Z. F., Rockingham; Univ. of Pa., 1928; U.N.C.	1928	1930
Milham, C. G., Hamlet; Jeff. Med. Coll., 1927; U.N.C.	1927	1930
Nicholson, N. G., Jr., Rockingham; N. C. Med. Coll., 1917	1917	1920
Parsons, W. H., Ellerbe; N. C. Med. Coll., 1916	1916	1919
Terry, Wm. Calvin, Hamlet; N. C. Med. Coll., 1911; Univ. of Md., 1912	1912	1914
Webb, W. P., Rockingham (Hon.); Med. Coll. of S. C., 1897; U.N.C.	1897	1904

ROBESON COUNTY SOCIETY

President: Hedgpeth, L. R., Lumberton; Univ. of Md., 1933; Wake Forest	1933	1934
Secretary: Biggs, J. I., Lumberton; Northwestern Univ., 1932	1937	1938
Allen, G. C., Lumberton; Rush Med. Coll., 1932; U.N.C.	1933	1934
Baker, Horace M., Lumberton; Harvard Univ., 1917	1919	1919
Beam, R. S., Lumberton; Jeff. Med. Coll., 1912; U.N.C.	1912	1913
Bender, John, Red Springs	1937	1939
Benson, N. O., Lumberton; Univ. of Ga., 1930	1933	1934
Bowman, E. L., Lumberton; Med. Coll. of Va., 1914	1914	1916
Britt, J. N., Lumberton; Atlanta Med. Coll., 1914	1923	1924
Brown, J. P., Fairmont (Hon.); Univ. of Md., 1883	1889	1893
Bullock, D. D., Rowland; Med. Coll. of S. C., 1920	1927	1939
Carmichael, Thaddeus W., Rowland; Univ. of Ky., 1904	1911	1919
Croom, R. D., Jr., Maxton; Med. Coll. of Va., 1934	1934	1937
Currie, D. S., Parkton (Hon.); N. C. Med. Coll., 1906	1906	1906
Hardin, E. R., Lumberton; Univ. of Ga., 1911	1915	1920
Hedgpeth, Wm. Cary, Lumberton; Northwestern Univ., 1933; Wake Forest, 1928	1933	1936
Hodgin, H. H., Red Springs (Hon.); N. C. Med. Coll., 1906; Univ. of Md., 1905	1906	1906
Holmes, A. B., Fairmont; Jeff. Med. Coll., 1910; U.N.C.	1910	1914
Johnson, C. T., Red Springs; Jeff. Med. Coll., 1920; Wake Forest	1920	1922
Johnson, Thomas C., Lumberton (Hon.); Med. Coll. of Va., 1903	1903	1903
Kinlaw, M. C., Pembroke; Temple Univ., 1935	1936	1938
Knox, John, Lumberton (Hon.); Univ. of Md., 1906	1907	1907
Martin, J. A., Lumberton; Med. Coll. of Va., 1915	1915	1917
McAlister, H. A., Lumberton; Duke Univ., 1937	1937	1940
McClelland, Joseph O., Maxton; Med. Coll. of Va., 1908	1912	1913
McGrath, F. B., Lumberton; Northwestern Univ., 1933	1937	1938
McIntyre, Stephen, Lumberton; Jeff. Med. Coll., 1928; Wake Forest, 1926	1928	1930
McMillan, R. D., Red Springs; Univ. of Md., 1910; U.N.C.	1911	1912
Nash, J. Fred, St. Pauls; N. C. Med. Coll., 1914	1914	1916

Name and Address	*Licensed*	*Joined State Society*
Norment, R. L., Lumberton; Tulane, 1939	1939	1940
Ricks, Leonard E., Fairmont (Hon.); Med. Coll. of Va., 1896	1896	1898
Smith, John McNeill, Rowland (Hon.); Jeff. Med. Coll., 1908; U.N.C.	1908	1909
Temple, Wade, Lake View, S. C.; Univ. of Md., 1928	1928	1931
Townsend, R. G., St. Pauls; Tulane, 1927	1927	1934
Weinstein, M. H., Fairmont; Northwestern Univ., 1936	1937	1938
Weinstein, R. L., Fairmont; Jeff. Med. Coll., 1936	1936	1938

ROCKINGHAM COUNTY SOCIETY

President: McAnally, James McG., Reidsville; Univ. of Pa., 1927; U. N. C.	1927	1928
Secretary: Johnson, G. F., Reidsville; Jeff. Med. Coll., 1934	1934	1938
Byrd, Allen L., Leaksville; Jeff. Med. Coll., 1936	1936	1937
Casteen, Kenan, Leaksville; Bellevue Med. Coll., 1918; Wake Forest, 1916	1919	1921
Cox, A. M., Madison; Med. Coll. of Va., 1932	1932	1938
Cozart, B. F., Reidsville; Med. Coll. of Va., 1931	1931	1931
Cummings, M. P., Reidsville; Jeff. Med. Coll., 1911; U.N.C.	1911	1913
Ferneyhough, W. T., Reidsville; Univ. of Md., 1916	1926	1927
Fetzer, Paul W., Reidsville; Univ. of Va., 1916; U.N.C.	1916	1920
Fulp, J. F., Stoneville; Duke Univ., 1935	1937	1940
Hester, William S., Reidsville; Jeff. Med. Coll., 1926; U.N.C.	1929	1930
Johnson, W. A., Reidsville (Hon.); N. C. Med. Coll., 1907	1909	1910
Klenner, Fred R., Reidsville; Duke Univ., 1936	1937	1940
Matthews, Wm. W., Leaksville; Chicago Coll. of Med. and Surgery, 1913	1915	1916
McGehee, John Wm., Reidsville (Hon.); Univ. of Md., 1904	1904	1905
Price, H. H., Draper	——	1940
Ray, John B., Leaksville (Hon.); Balt. Med. Coll., 1898	1898	1898
Ray, S. P., Leaksville; Univ. of Pa., 1929; U.N.C.	1929	1931
Reynolds, Ernest H., Mayodan; N. Y. Univ., 1935; Wake Forest, 1931	1935	1936
Tuttle, A. F., Spray (Hon.); N. C. Med. Coll., 1901	1901	1906
Tyner, Carl V., Leaksville; Bellevue Med. Coll., 1916; Wake Forest, 1914	1916	1919
Wilson, Newton G., Madison; N. C. Med. Coll., 1914	1914	1915

ROWAN COUNTY SOCIETY

President:		
Secretary: Robertson, L. H., Salisbury; Univ. of Pa., 1929; U.N.C.	1929	1931
Black, O. R., Landis; N. C. Med. Coll., 1914	1914	1918
Brown, Clarence E., Salisbury; N. C. Med. Coll., 1918	1920	1921
Busby, G. F., Salisbury; Johns Hopkins, 1932	1932	1936
Byerly, Andrew B., Cooleemee (Hon.), Univ. Coll. of Med., 1896; U.N.C.	1896	1904
Clement, Edward B., Salisbury (Hon.); Jeff. Med. Coll., 1906; U.N.C.	1906	1913
Coleman, L. A., Salisbury, Univ. of Ala., 1912	1927	1935
Eagle, J. C., Spencer; Jeff. Med. Coll., 1923; U.N.C.; Wake Forest, 1921	1923	1925
Field, B. Lewis, Salisbury; Med. Coll. of Va., 1931	1933	1939
Flemming, Giles M., Cleveland; Emory Univ., 1919	1919	1921
Frazier, J. W., Salisbury; Jeff. Med. Coll., 1924	1924	1927
Kavanagh, W. P., Cooleemee; Duke Univ., 1935	1938	1939
Ketchie, J. M., Salisbury; Jeff. Med. Coll., 1922	1922	1925
Long, Wm. Matthews, Mocksville; Tulane, 1933	1934	1934
Lowery, John R., Salisbury; Univ. of Md., 1904; U.N.C.	1904	1913
Marsh, Frank B., Salisbury; Jeff. Med. Coll., 1919; U.N.C.	1919	1922
McCutchan, Frank, Salisbury; Univ. of Va., 1920	1927	1928
Mock, C. Glenn, Salisbury; Univ. of Pa., 1935	1935	1938
Monk, Henry L., Salisbury (Hon.); Med. Coll. of Va., 1899; U.N.C.	1899	1903
Newman, H. H., Salisbury; Johns Hopkins, 1913	1914	1916
Peeler, John H., Salisbury (Hon.); Univ. Coll. of Med., 1899	1899	1904
Seay, T. W., Spencer; Univ. of Md., 1921	1922	1924
Shafer, Irving E., Salisbury; N. C. Med. Coll., 1914	1914	1914
Shinn, G. C., China Grove; Univ. of Md., 1933	1933	1940
Sigman, Frederick G., Spencer (Hon.); Univ. Coll. of Med., 1909	1909	1910
Slate, Wesley C., Spencer (Hon.); Univ. of Tenn., 1903	1903	1904
Spencer, Frederick B., Salisbury (Hon.); Univ. of N. C., 1909	1909	1911
West, Robert M., Salisbury (Hon.); Med. Coll. of Va., 1900	1900	1904
Woodson, Charles W., Salisbury (Hon.); Columbia Univ., Coll. of P. and S., N. Y., 1904	1905	1907

RUTHERFORD COUNTY SOCIETY

President: Jones, C. S., Cliffside; Univ. of Indiana, 1936	1937	1938
Secretary: Glenn, C. F., Rutherfordton; Univ. of Louisville, 1914	1927	1928

Name and Address	*Licensed*	*Joined State Society*
Biggs, Montgomery H., Rutherfordton (Hon.); Univ. of Pa., 1897	1907	1908
Bland, Charles A., Forest City; Med. Coll. of Va., 1935	1937	1938
Bostic, W. C., Jr., Forest City; Univ. of Pa., 1926; Wake Forest, 1924	1926	1927
Bostic, W. C., Forest City (Hon.); N. C. Med. Coll., 1905; Chattanooga Med. Coll., 1899	1905	1905
Coffey, James C., Cliffside; Emory Univ., 1937	1937	1940
Crawford, Robert H., Rutherfordton; Johns Hopkins, 1914	1920	1921
Eaves, Rupert S., Rutherfordton; Med. Coll. of Va., 1932	1932	1933
Elliott, Wm. M., Forest City; Univ. of Ga., 1934	1934	1935
Gold, Charles F., Rutherfordton; Univ. of N. C., 1910	1910	1911
Harrill, L. B., Caroleen (Hon.); Chattanooga Med. Coll., 1897	1902	1904
Head, W. T., Campobello, S. C.; Coll. of P. & S., Atlanta, 1911	1911	1923
Hunt, J. F., Spindale, Univ. of Tenn., 1900	1900	1912
Logan, F. W. H., Rutherdfordton; N. C. Med. Coll., 1916	1916	1919
Lovelace, Thos. C., Henrietta; N. C. Med. Coll., 1917	1920	1920
Moss, G. O., Cliffside; Emory Univ., 1927; Wake Forest, 1925	1927	1929
Norris, Henry, Waverly Mills, S. C. (Hon.); Univ. of Pa., 1897	1907	1908
Reid, Geo. P., Forest City (Hon.); Univ. Coll. of Med., 1895	1894	1899
Rucker, Adin Adam, Rutherfordton (Hon.); Univ. of Md., 1908	1908	1909
Washburn, B. E., Rutherfordton; Univ. of Va., 1911	1912	1917
Washburn, J. M., Lake Lure; Northwestern Univ., 1899	1934	1936
Whims, H. C., Rutherfordton; Univ. of Md., 1931	1931	1933
Wiseman, P. H., Avondale; Med. Coll. of Va., 1925	1925	1926

SAMPSON COUNTY SOCIETY

President: Williams, Jabez H., Clinton; Jeff. Med. Coll., 1920	1920	1922
Secretary: Starling, W. P., Roseboro; Med. Coll. of Va., 1933	1933	1936
Ayers, J. S., Clinton; Jeff. Med. Coll., 1932	1932	1937
Best, G. E., Clinton; Temple Univ., 1938	1938	1940
Brewer, J. Street, Roseboro; Jeff. Med. Coll., 1919; Wake Forest, 1917	1919	1921
Cox, S. C., Kerr; Med. Coll. of Va., 1935	1935	1937
Crumpler, Paul, Clinton (Hon.); Univ. of Tenn., 1907	1907	1908
Johnson, A. N., Garland; Univ. of Pa., 1933; U.N.C.	1933	1935
Lee, J. Marshall, Newton Grove; Med. Coll. of Va., 1916	1920	1923
Matthews, James O., Clinton (Hon.); Univ. Coll. of Med., 1897	1897	1902
Moore, K. C., Newton Grove; Univ. of Mich., 1909	1909	1910
Nelson, W. H., Clinton; Temple Univ., 1934	1934	1936
Parker, Oscar L., Clinton; Med. Coll. of Va., 1918	1918	1919
Royal, D. M., Salemburg; Med. Coll. of Va., 1926; Wake Forest, 1924	1926	1928
Sessoms, E. T., Roseboro; N. C. Med. Coll., 1915	1915	1917
Sikes, Gibson L., Salemburg (Hon.); Univ. Coll. of Med., 1900	1900	1902
Sloan, Wm. H., Garland; Univ. of Md., 1916; U.N.C.	1916	1920
Small, Victor R., Clinton; Ohio State Univ., 1916	1920	1921

SCOTLAND COUNTY SOCIETY

President: James, Albert W., Laurinburg; Jeff. Med. Coll., 1918	1918	1921
Secretary: Summerlin, Harry, Laurinburg; S. C. Med. Coll., 1933	1933	1935
Buchanan, L. T., Laurinburg; Jeff. Med. Coll., 1913; Wake Forest, 1911	1913	1918
Erwin, Evan A., Laurinburg; Med. Coll. of S. C., 1912	1912	1913
James, F. P., Laurinburg; Univ. of Pa., 1916; U.N.C.	1916	1917
John, Peter, Laurinburg (Hon.); Univ. of Md., 1897; U.N.C.	1897	1904
Livingston, Everett Alex. Gibson; Univ. of Md., 1912	1912	1913
Pate, James G., Gibson; Univ. of Pa., 1916; U.N.C.	1916	1918
Reed, D. H., Wagram (Hon.); Geo. Washington Univ., 1901	1904	1906
Wilkes, Marcus B., Laurinburg; N. C. Med. Coll., 1912	1923	1923

STANLY COUNTY SOCIETY

President:		
Secretary: Lapsley, A. F., Badin; Med. Coll. of Va., 1933	1936	1937
Allen, Jos. A., New London (Hon.); Univ. Coll. of Med., 1901	1901	1904
Bigler, V. L., Albemarle; Univ. of Pittsburg, 1925	1926	1927
Dickson, M. S., Oakboro; Med. Coll. of S. C., 1927	1927	1929
Flythe, W. H., Norwood; Vanderbilt Univ., 1933; U.N.C.	1933	1937
Gaskin, J. S., Albemarle; Med. Coll. of S.C., 1925	1929	1931
Gaskin, Lewis R., Albermarle; Med. Coll. of S. C., 1921	1924	1926
Gaskin, Madge B., Albemarle; Med. Coll. of S. C., 1926	1933	1934
Hathcock, Thomas A., Norwood (Hon.); Univ. of Md., 1893; U.N.C.	1893	1904
Hill, Wm. Isaac, Albemarle (Hon.); Univ. of Md., Coll. of P. & S., Balt,. 1897	1897	1904
Laton, James F., Albemarle (Hon.); N. C. Med. Coll., 1904	1904	1910
McKenzie, Wayland N., Albemarle; Med. Coll. of Va., 1935	1935	1937
McLeod, W. L., Norwood; Temple Univ., 1938	1938	1940
Moore, D. Bain, Badin; Univ. Coll. of Med., 1913	1913	1915

Name and Address	*Licensed*	*Joined State Society*
Outlaw, J. K., Albemarle; Syracuse Univ., 1923; Wake Forest, 1921	1926	1934
Shaver, W. T., Albemarle; Univ. of Md., 1918	1920	1921
Tally, B. T., Albemarle; Jeff. Med. Coll., 1921; Wake Forest, 1919	1921	1922

STOKES—SEE FORSYTH

SURRY-YADKIN COUNTIES SOCIETY

President:		
Secretary: Sykes, Charlie L., Pilot Mountain; Georgetown Univ., 1938	1938	1939
Ashby, E. C., Mt. Airy; Univ. of Pa., 1914	1914	1916
Beale, Seth M., Elkin; Tulane, 1935	1936	1938
Bell, S. A., Cycle; Northwestern Univ., 1934	1935	1938
Brandon, H. A., Yadkinville; Univ. of Syracuse, 1935	1935	1940
Britt. T. C., Mt. Airy; Jeff. Med. Coll., 1921; Wake Forest, 1919	1921	1925
Caldwell, Robert M., Mt. Airy; Univ. of Va., 1936	1938	1940
Flippin, J. M., Pilot Mountain (Hon.); Coll. of P. & S., Balt., 1884	1893	1900
Flippin, Samuel T., Siloam (Hon.); N. C. Med. Coll., 1898	1898	1898
Franklin, R. B. C., Mt. Airy; Queens Univ., 1931	1938	1940
Gambill, I. S., Elkin; N. C. Med. Coll., 1912	1912	1917
Lovill, Robert Jones, Mt. Airy; Univ. of Md., 1910; U.N.C.	1910	1913
Martin, Moir S., Mt. Airy; Univ. Coll. of Med., 1905	1909	1916
Mitchell, R. C., Mt. Airy; Univ. of Pa., 1919; U.N.C.	1921	1923
Parks, Hugh, Elkin; Jeff. Med. Coll., 1921; U.N.C.	1921	1928
Reeves, G. F., East Bend; Med. Coll. of S. C., 1925	1925	1940
Royall, M. A., Elkin (Hon.); Coll. of P. & S., Balt., 1885	1889	1904
Salmons, H. C., Elkin (Hon.); N. C. Med. Coll., 1904	1904	1908

SWAIN COUNTY SOCIETY

TRANSYLVANIA COUNTY SOCIETY

Osborne, Joe E., Rosman; Med. Coll. of Va., 1930	1930	1930

TYRRELL—SEE MARTIN-WASHINGTON-TYRRELL

UNION COUNTY SOCIETY

President: Goudelock, Jno. J., Monroe; Med. Coll. of S. C., 1923	1924	1924
Secretary: Love, Wm. M., Monroe; N. C. Med. Coll., 1915	1915	1919
Blair, M. P., Marshville (Hon.); Med. Coll. of Va., 1895	1895	1895
Bolt. C. A., Marshville; Med. Coll. of S. C., 1926	1929	1930
Faulk, J. G., Monroe; Med. Coll. of Va., 1931; Wake Forest, 1929	1931	1932
Garren, R. H., Monroe (Hon.); Univ. of Nashville, 1900	1901	1904
Ham. Clem, Monroe; Med. Coll. of S. C., 1926	1929	1930
Hardin, Parker C., Monroe; Harvard Univ., 1927	1937	1937
McLeod, John Purl Utley, Wingate; Coll. of Med. Evangelists, 1939	1939	1940
Neal, John W., Monroe (Hon.); N. Y. Univ., 1884	1887	1904
Neese, K. E., Monroe; Washington Univ., 1929; U.N.C.	1929	1934
Ormand, J. W., Monroe; Univ. of Cincinnati, 1926; U.N.C.	1926	1928
Smith, G. M., Monroe; N. C. Med. Coll., 1914	1914	1919

VANCE COUNTY SOCIETY

President: Wheeler, J. H., Henderson; Jeff. Med. Coll., 1918; U.N.C.	1918	1920
Secretary: Rollins, C. D., Henderson; Univ. of Pa., 1935; U.N.C.	1935	1939
Bass, H. Hartwell, Jr., Henderson; Univ. of Pa., 1928; U.N.C.	1929	1930
Fenner, Edwin F., Henderson (Hon.); Univ. of Md., 1905	1906	1907
Furman, Wm. H., Henderson; Jeff. Med. Coll., 1910	1910	1913
Gregg, A. D., Henderson; Med. Coll. of S. C., 1913	1927	1928
Newcomb, A. P., Henderson; Jeff. Med. Coll., 1922; U.N.C.	1922	1925
Newell, H. A., Henderson (Hon.); Coll. of P. & S., Balt., 1906	1906	1906
Rollins, Vance B., Henderson; Univ. of Pa., 1932; U.N.C.	1932	1936
Upchurch, Robert T., Henderson; Jeff. Med. Coll., 1908; U.N.C.	1908	1911

WAKE COUNTY SOCIETY

President:		
Secretary:		
Abernathy, Claude O., Raleigh (Hon.); Univ. of N. C., 1906	1906	1906
Ashby, J. W., Raleigh; Univ. of Md., 1905	1921	1922
Barbee, G. S., Zebulon; Univ. of N. C., 1910	1910	1912
Bolus, Michael, Raleigh; Jeff. Med. School, 1934	1934	1938
Brian, Earl, Raleigh; Duke Univ., 1934	1936	1939
Broughton, A. C., Jr., Raleigh; Med. Coll. of Va., 1937	1937	1939
Buffaloe, J. S., Garner (Hon.); Balt. Med. Coll., 1900	1900	1904
Bugg, C. R., Raleigh; Johns Hopkins, 1922	1924	1926
Bulla, A. C., Raleigh; N. C. Med. Coll., 1915	1915	1918

Name and Address	*Licensed*	*Joined State Society*
Burt. B. W., Holly Springs (Hon.); Coll. of P. & S., Balt., 1886	1886	1904
Campbell. Alton C., Raleigh; Univ. of N. C., 1910	1910	1912
Caviness, V. S., Raleigh; Jeff. Med. Coll., 1921; U.N.C.	1921	1926
Caviness. Zebulon M., Raleigh (Hon.); Univ. of N. C., 1903	1903	1903
Coleman. G. S., Raleigh (Hon.); Med. Coll. of Va., 1907	1907	1908
Combs, Jos J., Raleigh; Columbia Univ., Coll. of P. & S., N. Y., 1926	1926	1929
Cooper, G. M., Raleigh (Hon.); Univ. Coll. of Med., 1905	1905	1904
Cozart, W. S., Fuquay Springs; Med. Coll. of Va., 1914	1914	1917
Crumpler, A. G., Fuquay Springs; Temple Univ., 1936	1936	1938
Dewar, Wm. B., Raleigh; Univ. of Pa., 1920; U.N.C.	1920	1923
Dickinson, K. L., Raleigh; Univ. of Minn., 1932	1935	1936
Eldridge. Chas. P., Raleigh; Univ. of Pa., 1926; U.N.C.	1926	1928
Finch, O. E., Raleigh; Jeff. Med. Coll., 1915; U.N.C.	1915	1917
Flowers, C. E., Zebulon; Med. Coll. of Va., 1913; U.N.C.	1915	1916
Foster. Glenn G., Raleigh; Univ. of Iowa, 1931	1936	1938
Fox. P. G., Raleigh; Med. Coll. of Va., 1922	1923	1929
Fox, Robert Eugene; Raleigh; Univ. of Pa., 1926	1926	1929
Freeman, R. H., Raleigh; Jeff. Med. Coll., 1908	1908	1919
Gibson, M. R., Raleigh (Hon.); Univ. of Md., 1905; U.N.C.	1905	1906
Glascock. H. W., Jr., Raleigh; N. Y. Univ., 1934; U.N.C.	1934	1936
Goodwin, O. S., Apex; Jeff. Med. Coll., 1923; U.N.C.	1923	1926
Hall. W. D., Raleigh; Med. Coll. of S. C., 1932	1933	1934
Hamilton. John H., Raleigh; Harvard Univ., 1916	1926	1926
Haywood, Hubert B., Raleigh (Hon.); Univ. of Pa., 1909	1909	1910
Herring. E. H., Raleigh; Univ. of Pa., 1930; Wake Forest	1930	1934
Hicks. V. M., Raleigh; Jeff. Med. Coll., 1918	1918	1922
Hightower. Felda, Raleigh; Univ. of Pa., 1933	1933	1936
Hill, Millard D., Raleigh; Med. Coll. of Va., 1928; Wake Forest	1928	1931
Hitch, Joseph M., Raleigh; Univ. of Va., 1933	1938	1939
Horton. M. C., Raleigh; Univ. Coll. of Med., 1903; U.N.C.	1911	1912
Horton, Wm. C., Raleigh (Hon.); Coll. of P. & S., Balt., 1897	1896	1904
Jones, Carey C., Apex; Jeff. Med. Coll., 1920; Wake Forest, 1918	1920	1923
Judd. Eugene C., Raleigh; Univ. of Pa., 1911; U.N.C.	1911	1912
Judd, Glenn B., Varina; Vanderbilt Univ., 1932; Duke Univ.	1934	1935
Judd, James M., Varina (Hon.); Balt. Med. Coll., 1897	1897	1901
King. E. S., Wake Forest; Jeff. Med. Coll., 1927; Wake Forest, 1925	1927	1930
Kitchin. Thurman D., Wake Forest (Hon.); Jeff. Med. Coll., 1908; U. N. C.	1908	1908
Knox. J. C., Raleigh; Univ. of Md., 1924	1924	1932
Lane, Bessie. Raleigh; Woman's Med. Coll. of Pa., 1921	1921	1926
Lawrence, Ben J., Raleigh; Jeff. Med. Coll., 1918; U.N.C.	1918	1920
Liles. L. C., Raleigh; Med. Coll. of Va., 1930; U.N.C.	1930	1933
Lupton. E. S., Raleigh; N. Y. Univ., 1938	1938	1940
Mackie. Geo. C., Wake Forest; Univ. of Pa., 1928; Wake Forest, 1926	1928	1932
McGee. Robert L., Raleigh; Univ. of Pa., 1932	1932	1935
McLeod. N. H., Raleigh; Univ. of Pa., 1930; U.N.C.	1930	1932
Miller, Lila Bonner, Raleigh	——	1936
Mitchener. J. S., Raleigh; Johns Hopkins, 1915	1915	1917
Morehead. Robert P., Wake Forest; Jeff. Med. Coll., 1936	1936	1938
Neal. Kemp P., Raleigh; Harvard Univ., 1917	1920	1921
Neal, Paul N., Raleigh; Harvard Univ., 1919	1920	1921
Noble, R. P., Raleigh (Hon.); Univ. of N. C., 1907	1907	1908
Oliver, A. S., Raleigh; Jeff. Med. Coll., 1914; U.N.C.	1914	1919
Owen. J. F., Raleigh; Jeff. Med. Coll., 1920; Wake Forest, 1918	1920	1927
Peasley, E. D., Raleigh; Univ. of Iowa, 1927	1939	1940
Powers. Frank P., Raleigh; Univ. of Pa., 1927; Wake Forest, 1923	1927	1928
Procter, I. M., Raleigh; Univ. of Pa., 1915	1915	1917
Rand. E. G., Raleigh; Univ. of Pa., 1926; U.N.C.	1926	1929
Ray, O. L., Raleigh (Hon.); Univ. Coll. of Med., 1899	1899	1904
Reynolds. C. V., Raleigh (Hon.); Univ. of N. Y., 1895	1895	1896
Rhodes, John S., Raleigh; Harvard Univ., 1929; U.N.C.	1929	1936
Ritchie, Richard F., Raleigh; Univ. of Buffalo, 1927	1939	1940
Root. Aldert S., Raleigh; Univ. of Pa., 1911	1911	1913
Royster, Hubert A., Raleigh (Hon.); Univ. of Pa., 1894	1894	1895
Ruark, R. J., Raleigh; Univ. of Pa., 1931	1931	1934
Sinclair, L. G., Raleigh; Univ. of Pa., 1933	1933	1939
Smith, Sidney. Raleigh; Tulane, 1925; U.N.C.	1925	1930
Stimpson, R. T., Raleigh; Univ. of Pa., 1927; U.N.C.	1927	1930
Strickland, W. M., Wendell; Med. Coll. of Va., 1919	1921	1923
Summers, T. O., Raleigh; Med. Coll. of Va., 1917	1939	1940
Thompson, Hugh A., Raleigh; Univ. of Pa., 1914	1914	1917
Turner, H. G., Raleigh; Univ. of Pa., 1906; U.N.C.	1907	1910
Umphlet, Thos. L., Raleigh; Univ. of Pa., 1934	1934	1939

Name and Address	*Licensed*	*Joined State Society*
Vann, H. M., Wake Forest; Jeff. Med. Coll., 1917; Wake Forest, 1915	1920	1923
Wall, Roger I., Raleigh; Tulane, 1934	1934	1937
Ward, W. T., Raleigh; Univ. of Md., 1925	1925	1927
Weathers, R. R., Knightdale; Med. Coll. of Va., 1926; Wake Forest, 1924	1926	1928
West, Louis N., Raleigh; Jeff. Med. Coll., 1912; U.N.C.	1912	1915
Wilkerson, Annie Louise, Raleigh; Med. Coll. of Va., 1938	1938	1939
Wilkerson, Charles B., Raleigh (Hon.); Univ. of N. C., 1906	1906	1908
Wilkinson, C. T., Wake Forest; Tulane, 1922; Wake Forest, 1920	1922	1924
Wilkinson, R. W., Jr., Wake Forest; Tulane, 1922; Wake Forest, 1920	1923	1924
Williams, Chas. F., Raleigh; Jeff. Med. Coll., 1934	1934	1937
Wilson, Frank, Jr., Raleigh; Univ. of Md., 1932; U.N.C.	1932	1937
Wright, J. B., Raleigh (Hon.); Univ. Coll. of Med., 1889; U.N.C.	1899	1900

WARREN COUNTY SOCIETY

President: Peete, C. H., Warrenton (Hon.); Univ. of Pa., 1903	1906	1906
Secretary: Foster, H. H., Norlina; Jeff. Med. Coll., 1919	1919	1923
Macon, G. H., Warrenton; Univ. Coll. of Med., 1910	1910	1911

WASHINGTON—SEE MARTIN-WASHINGTON-TYRRELL

WATAUGA-ASHE COUNTIES SOCIETY

Harmon, R. H., Boone; Med. Coll. of Va., 1936	1936	1936
Jones. D. C., Lansing; Univ. of Pa., 1927	1930	1930
King, Robert Rogers, Boone; Univ. of Ark., 1906	1931	1932
Perry, H. B., Boone; N. C. Med. Coll., 1905	1905	1922

WAYNE COUNTY SOCIETY

President:		
Secretary: Benton, Geo. R., Jr., Goldsboro; Univ. of Pa., 1934; U.N.C.	1935	1938
Benton, Geo. Ruffin, Sr., Fremont; Med. Coll. of Va., 1901	1905	1904
Best, D. E., Goldsboro; Univ. of Md., 1924; Wake Forest, 1922	1924	1926
Bizzell, M. E., Goldsboro; Tulane, 1923; U.N.C.	1923	1925
Bizzell, T. M., Goldsboro; Univ. of Md., 1908	1908	1912
Brown, C. R., Goldsboro; Med. Coll. of S. C., 1934	1934	1937
Clark, Milton, Goldsboro; Emory Univ., 1937	1937	1939
Cobb, Donnell B., Goldsboro; Univ. of Pa., 1921; U.N.C.	1921	1926
Cobb, Wm. H., Goldsboro (Hon.); Jeff. Med. Coll., 1889	1889	1890
Dale, G. C., Goldsboro; Univ. of Pa., 1925; U.N.C.	1925	1927
Harrell, L. J., Goldsboro; Univ. of Md., 1930; Wake Forest	1930	1934
Henderson, C. C., Mt. Olive; Univ. of Md., 1914; U.N.C.	1914	1919
Howard, C. E., Goldsboro; Univ. of Pa., 1925; U.N.C.	1925	1927
Irwin, Henderson, Eureka; Univ. of Md., 1912	1914	1916
Ivey, H. B., Goldsboro; Univ. Coll. of Med., 1911; Wake Forest, 1909	1911	1917
King, L. D., Mt. Olive; Rush Med. Coll., 1933	1939	1940
Long, I. C., Goldsboro; Univ. of Md., 1923	1923	1937
McCuiston, A. M., Mt. Olive; N. C. Med. Coll., 1911	1911	1917
McPheeters, S. B., Goldsboro; Washington Univ., 1906	1933	1934
Miller, Robert B., Goldsboro (Hon.); Med. Coll. of Va., 1898; U.N.C.	1900	1902
Person, Edgar Cooper; Pikeville (Hon.); Med. Coll. of Va., 1905	1905	1908
Rand, C. H., Fremont; Univ. of Pa., 1926; U.N.C.	1926	1928
Rose, David J., Goldsboro; Tulane, 1922	1922	1924
Rose, James W., Pikeville; Tulane, 1928	1928	1931
Smith, W. C., Goldsboro; Univ. of Md., 1936	1936	1938
Smith, Wm. H., Goldsboro; Univ. of Pa., 1906; U.N. C.	1907	1912
Stenhouse, Henry M., Goldsboro; Univ. of Colo., 1913	1937	1938
Stevick, C. P., Southport; Duke Univ., 1936	1938	1940
Strosnider, Chas. F., Goldsboro; Univ. of Md., 1909	1910	1913
Sutton, Wm. G., Seven Springs (Hon.); Jeff. Med. Coll., 1889	1889	1904
Warrick, L. A., Goldsboro; Geo. Washington Univ., 1923; Wake Forest, 1920	1923	1924
Whelpley, Frank L., Goldsboro; Univ. of Mo., 1902	1918	1919
Wilkins, J. W., Mt. Olive; Med. Coll. of Va., 1913; U.N.C.	1913	1917
Woodard, A. G., Goldsboro (Hon.); Univ. of N. C., 1907	1907	1909
Zealy, A. H., Jr., Goldsboro; Harvard Univ., 1930	1932	1934

WILKES-ALLEGHANY COUNTIES SOCIETY

Name and Address	*Licensed*	*Joined State Society*
President: Morris, John W., N. Wilkesboro; Univ. of Va., 1936	1938	1938
Secretary: Phillips, E. N., N. Wilkesboro; Med. Coll. of Va., 1930	1930	1935
Bentley, J. Gordon, Pores Knob; Univ. of Louisville, 1911	1938	1939
Bundy, William, N. Wilkesboro; Vanderbilt Univ., 1936	1936	1940
Eller, Albert J., Wilkesboro (Hon.); Coll. of P. & S., Balt., 1893	1895	1904
Gilreath, Frank H., N. Wilkesboro (Hon.); Univ. of Nashville, 1898	1898	1898
Hubbard, Fred C., N. Wilkesboro; Jeff. Med. Coll., 1918; U.N.C.	1919	1924
Hutchens, E. M., N. Wilkesboro (Hon.); N. C. Med. Coll., 1896	1896	1904
McNeill, James H., N. Wilkesboro; Geo. Washington Univ., 1926	1926	1927
Miles, Walter W., Champion; Univ. of Tenn., 1931	1933	1934
Mitchell, G. T., Wilkesboro; Jeff. Med. Coll., 1927; U.N.C.	1927	1928
Newton, Wm. K., N. Wilkesboro; Med. Coll. of Va., 1931	1932	1933
Sink, C. S., N. Wilkesboro; N. C. Med. Coll., 1912	1912	1913
Smith, Harold Benjamin, N. Wilkesboro; Med. Coll. of S. C., 1929	1929	1930

WILSON COUNTY SOCIETY

President: Simons, C. E., Wilson; Med. Coll. of Va., 1930; U.N.C.	1930	1935
Secretary: Sloan, Wm. S., Wilson; Vanderbilt Univ., 1933	1933	1935
Anderson, Wade H., Wilson (Hon.); Univ. of Va., 1902	1904	1904
Bell, G. E., Wilson; Jeff. Med. Coll., 1921; Wake Forest	1921	1922
Best, Henry B., Wilson (Hon.); Univ. of N. C., 1907	1907	1908
Blackshear, T. J., Wilson; Emory Univ., 1914	1923	1924
Bradshaw, T. G., Wilson; Med. Coll. of Va., 1909	1924	1924
Clark, Badie T., Wilson; Univ. of Ga., 1930	1934	1935
Dickinson, Elijah T., Wilson (Hon.); Med. Coll. of Va., 1895	1895	1900
Fike, Ralph L., Wilson; Med. Coll. of S. C., 1932	1933	1934
Goodwin, Cleon W., Wilson; Univ. of Pa., 1934	1934	1940
Hunter, W. C., Wilson; Univ. of Pa., 1928; U.N.C.	1928	1931
Kerr, Jos. T., Wilson; Jeff. Med. Coll., 1935	1935	1940
McClees, E. C., Elm City; Med. Coll. of Va., 1917	1920	1920
Mitchell, Geo. W., Wilson; Univ. Coll. of Med., 1913	1913	1914
Moore, Chas. E., Wilson (Hon.); Bellevue Med. Coll., 1875	1875	1875
Pittman, M. A., Wilson; Jeff. Med. Coll., 1921; Wake Forest, 1919	1924	1923
Putney, R. H., Elm City; Med. Coll. of Va., 1914	1914	1920
Sader, Julius, Bailey; N. Y. Univ., 1928	1938	1939
Saliba, Michael M., Wilson (Hon.); Balt. Med. Coll., 1897	1910	1910
Smith, A. Jones, Black Creek; Univ. of Pa., 1921; U.N.C.	1921	1923
Strickland, Arthur T., Wilson; Washington Univ., 1932; U.N.C.	1932	1935
Strickland, Ernest L., Wilson; Med. Coll. of Va., 1916	1916	1917
Williams, Albert F., Wilson (Hon.); Univ. of Md., 1901; U.N.C.	1901	1904
Woodard, C. A., Wilson (Hon.); Univ. of Va., 1904	1904	1909

YADKIN—SEE SURRY-YADKIN

YANCEY COUNTY SOCIETY

AMERICAN BOARD OF OPHTHALMOLOGY

Important Announcement

There will be only one written examination during 1941. This will be held in various cities throughout the country on March 8.

Candidates enrolled in the Preparatory Group who have been advised that they will be eligible for examination during 1941 should make application at once to take this written examination.

Application must be made on the regular blanks provided for the purpose and must be received in the Board Office before December 1, 1940.

Oral examinations 1941: Cleveland, May or June; October (place to be announced later.)

Deadline for case reports: February 1, July 1.

A special oral and clinical examination will be held on the Pacific Coast during 1941 providing there will be enough candidates to warrant it. Applications for this examination should be filed before September 1, 1940, so that the Board may complete necessary arrangements.

If you plan on taking your examination during 1941, please write at once to the Board Office for formal application blanks, indicating your preference of examination place.

American Board of Ophthalmology
6830 Waterman Avenue
St. Louis, Missouri

ANNUAL MEETING OF EYE AND EAR SPECIALISTS

The American Academy of Ophthalmology and Otolaryngology will hold its forty-fifth annual convention in Cleveland, October 6 to 11, with headquarters at the Hotel Cleveland.

The Academy, an organization of more than 2,500 specialists in diseases of the eye, ear, nose and throat, carries on an active program of education for its members. In addition to scientific papers, an elaborate series of courses is presented at each convention to bring the members up to date in their chosen fields. More than 100 of these teaching lectures will be offered this year.

In the past year arrangements have been made to extend the teaching activities to young physicians just entering on specialization. Home study courses are being prepared for any of these young men who wish to take them and their work will be supervised by members of the academy interested in improving the caliber of specialists in practice.

The Cleveland meeting will be noteworthy in several respects.

The Academy will honor Dr. Secord H. Large, Cleveland, who this year completes thirty years as comptroller of the organization. Dr. Large as the honor guest of the meeting will receive many special distinctions.

Immediately following the Academy meeting, there will be a Pan-American Congress of Ophthalmology, October 11 and 12, which eye specialists from all the Latin American countries are expected to attend.

Dr. Frank Brawley, Chicago, is president of the Academy and Dr. Frank R. Spencer, Boulder, Colo., is president-elect. Vice presidents are Drs. Arthur W. Proetz, St. Louis; Joseph F. Duane, Peoria, Ill., and Charles T. Porter, Boston. Dr. William P. Wherry, 1500 Medical Arts Building, Omaha, is executive secretary.

THE AMERICAN NEUROLOGICAL ASSOCIATION

The American Neurological Association, in its Executive Session at the Westchester Country Club, Rye, New York, on June 7, 1940, unanimously passed the following resolution and directed its Secretary to send copies of this resolution to the Secretary of each State Board of Medical Examiners and to the editors of the Journal of the A. M. A. and of each State Medical Journal:

WHEREAS official statistics indicate that the immigration of refugee physicians is numerically small, representing in its totality less than .6 per cent of the practicing physicians of this country;

AND WHEREAS such an influx of physicians from abroad cannot adversely affect the economic welfare of American physicians if the emigres are distributed widely to those sections of the land in which they are needed;

AND WHEREAS information gathered from governmental and private investigations indicates that there are at least 2,000 communities in this land in need of immediate medical staffing which in large part cannot be supplied by the graduates of our own medical schools;

AND WHEREAS many of the demands for physicians come from states in which it has become impossible, either by reason of legal enactments or because of regulations of the State Boards, for the refugee physician to take his medical license examinations;

AND WHEREAS there now exists in New York a competent agency for diverting the unfit among the refugee physicians into non-medical fields thus making it possible only for those who are fit in training and in personality to be considered for examinations;

NOW THEREFORE BE IT RESOLVED that the State Boards of Medical Examiners in the United States shall create a uniform policy with regard to refugee physicians so as to make possible the wide distribution of these physicians to those places where they are needed throughout the land;

AND FURTHER that these uniform changes in the regulations of our State Boards shall be in the direction of the recommendations made by Dr. David L. Edsall in his article on "The Emigre Physician in American Medicine" (Journal of the A. M. A., March 23, 1940, Volume 114, pages 1068-1073);

AND FINALLY that the Committee for Resettlement of Foreign Physicians of the National Refugee Service, Inc., 165 West 46th Street, New York City, shall be utilized as a clearing house for information in regard to available emigre physicians for specific placements.

EXAMINATIONS

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY

The annual written examination and review of case histories (Part I) for Group B candidates will be held in various cities of the United States and Canada on Saturday, January 4, 1941, at 2:00 p. m. Candidates who successfully complete the Part I examinations proceed automatically to the Part II examinations held later in the year.

The following action regarding case records to be submitted by candidates taking the Group B, Part I, examination was passed by the Board at its annual meeting in Atlantic City, N. J., on June 6, 1940: "Case records submitted by candidates must be of patients treated within four years prior to the date of the candidate's application. The number of cases taken from one's residency service should not be more than half (25) of the total number of fifty (50) cases required".

Training Requirements

In response to numerous inquiries regarding special training requirements, the Board desires again to announce that there are three methods of meeting these requirements for admission to the Board examinations. First, by the residency system; second, by the partial residency and partial assistantship method; and third, entirely by the assistantship or "preceptorship method". Details of the residency requirements are given in the Board booklet. The Board will accept in lieu of the formal residency service the training acquired by a candidate serving on an assistant or dispensary staff of an obstetrical and gynecological division of a recognized Hospital, under the direction of a recognized obstetrician-gynecologist (preferably a Diplomate). The time required for this type of training must be longer than with the formal, more intensive residency type of training, and the allowance of time depends upon the duties and responsibility given the candidate. Applicants lacking all formal special training should have a minimum of five years of hospital clinic, or assistant staff appointments in the specialty, under approved direction. Teaching appointments without accompanying hospital staff or clinical appointments will not satisfy the Board requirements. A special form amplifying the original application must be filled out to cover the details of such assistantship, or preceptorship type, of training. The Board approves for special training, work done in institutions approved jointly by the Board and by the Council on Medical Education and Hospitals of the A. M. A.

For further information and application blanks address:

Dr. Paul Titus, Secretary,
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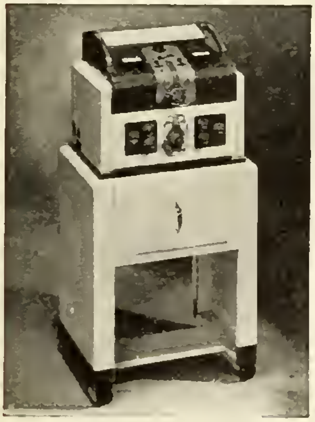
Pittsburgh, Pa.

BOOK REVIEWS

Simplified Diabetic Manual. By Abraham Rudy, M.D., Associate Physician and Chief of the Diabetic Clinic, Beth Israel Hospital, Boston; Instructor in Medicine, Tufts College Medical School; Consultant in Diabetes, Jewish Memorial Hospital, Roxbury, Mass., and Jewish Tuberculosis Sanatorium, Rutland, Mass. Price $2.00. Pp. 216. New York: M. Barrows and Company, 1940.

This little volume is, as stated on the cover, "a guide for the diabetic patient, the busy general practitioner, the dietitian and the nurse". It may safely be put into the hands of a diabetic patient and his family. At least half the book is devoted to the diet. Directions are given clearly and minutely, and best of all, simple household weights and measures are used; though the terms "large serving" and "average serving" are rather indefinite, and might be improved upon.

Another minor criticism is that in giving directions for withdrawing insulin from the bottle, nothing is said about injecting a volume of air corresponding to the amount of fluid to be taken out, in order to avoid creating a partial vacuum with resulting negative pressure. Still another technique this reviewer would want changed, if he had to take two or three hypodermic injections a day, is that of the hypodermic injection as illustrated in figures 5 and 5A. Instead of inserting the needle almost parallel with the skin surface and giving the injection subcutaneously, it is much less painful to give the injection straight into the muscle, with the needle at right angles to the skin surface.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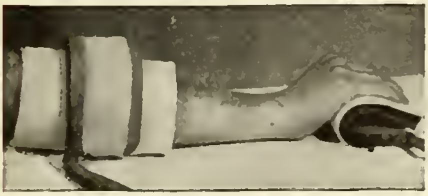
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*"Treatment of Acute Anterior Urethritis with Silver Picrate," Knight and Shelanski, AMERICAN JOURNAL OF SYPHILIS, GONORRHEA AND VENEREAL DISEASES, Vol. 23, No. 2, pages 201-206, March, 1939.

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Catalog on Application

BOOK REVIEWS—Continued

Clinical Heart Disease. By Samuel A. Levine, M.D., F.A.C.P., Assistant Professor of Medicine, Harvard Medical School; Senior Associate in Medicine, Peter Bent Brigham Hospital, Boston; Consultant Cardiologist, Newton Hospital; Physician, New England Baptist Hospital, Boston. Second Edition, Revised and Reset. 495 pages with 109 illustrations. Philadelphia and London: W. B. Saunders Company, 1940. Cloth, $6.00.

The second edition of this book amply justifies its name, "Clinical Heart Disease". It is written by a clinician for clinicians, and makes the various problems connected with the heart as simple as possible. Even electrocardiography, to which the last fourth of the book is devoted, is made as plain as this reviewer has ever known it to be. This section, too, deserves the title given it, "clinical electrocardiography". For the student or practitioner who wants a book that will bring his knowledge of the heart up to the minute, or that may frequently be used as a reference book, this work can be heartily commended.

ANNOUNCEMENT

"OSLER AT OLD BLOCKLEY"

"Osler at Old Blockley", a painting in oil by Dean Cornwell, was unveiled at the dedication of the Osler Memorial Building on the grounds of the Philadelphia General Hospital this past June and was later exhibited at the American Medical Association convention in New York.

The painting depicts one of Osler's outstanding contributions to medicine, namely, bringing medical students to the bedside of the patient for clinical study. In the painting Osler is shown at the side of an elderly patient on the hospital grounds. Surrounding Osler and the patient are internes who have stopped with him as they were on their way to the autopsy house to observe one of his famous post mortems. This autopsy house, now the only Osler Memorial Building in the United States, is shown in the background. This memorial was made possible by a grant from John Wyeth & Brother.

"Osler at Old Blockley" is the second painting in the series "Pioneers of American Medicine" sponsored by John Wyeth & Brother as part of a project to highlight the contributions of Americans to the advancement of medicine. "Beaumont and St. Martin" was the first painting in the series.

Colored reproductions of "Osler at Old Blockley", suitable for framing may be obtained free by addressing requests to the North Carolina Medical Journal, Winston-Salem, N. C. Prints will be sent from Philadelphia.

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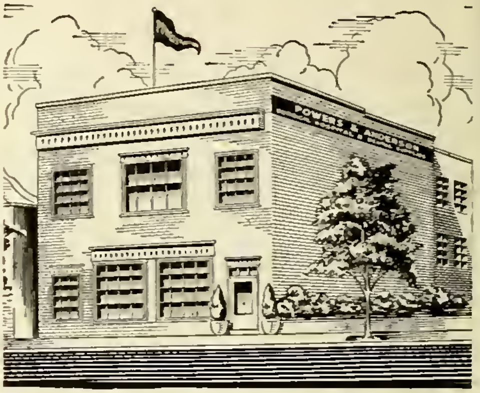

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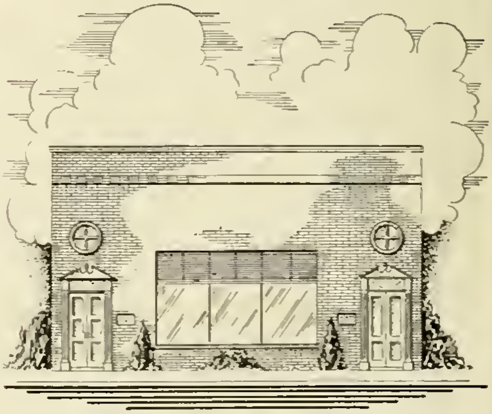

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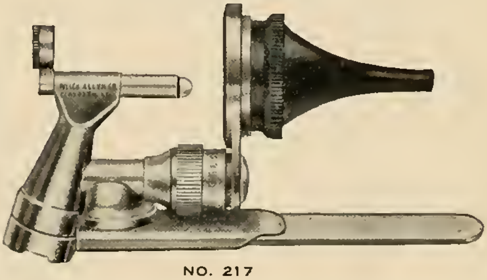

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NORTH CAROLINA MEDICAL JOURNAL

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VOL. I SEPTEMBER, 1940 No. 9

BIRTH CONTROL IN THE NORTH CAROLINA HEALTH DEPARTMENT

GEORGE M. COOPER, M.D.

RALEIGH

This paper is presented at the suggestion of Dr. Wingate M. Johnson, Editor of the NORTH CAROLINA MEDICAL JOURNAL, and by invitation of Dr. John C. Tayloe, the Section Chairman. It is the first written exposition of the position of the State Board of Health on birth control, and it is very proper that it should be frankly discussed with this group of specialists who know more about the need and the difficulties encountered in such a program than anybody else.

It is hardly necessary to say that the importance of spacing children in the interest of the public health makes it a part of preventive medicine. It is accepted as such by the State Board of Health and controlled by the medical profession instead of the laity.

It should not be necessary at this particular period in the world's history to stop for even one moment to present any argument for the necessity of such a program. Health officers and welfare workers everywhere for a long time have been convinced of the necessity for a scientific and practical approach to the problem. Leading physicians the world over have openly declared themselves in active support of intelligent efforts inside the medical profession. More than twenty years ago I heard Dr. W. S. Rankin, then State Health Officer of North Carolina, declare that in his opinion a sensible and scientific program of birth control would become an absolute necessity if civilization was to survive. The last few years have more than justified his position as already applicable to three-fourths of the peoples of the world.

The chief problem has been to devise a procedure acceptable to medicine, sociology, law and theology, and at the same time satisfactory for the individual to follow and effective in its results. That point has not yet been reached. No one knows better the difficulties in the way than the specialists in obstetrics and gynecology.

Man has done much to master the elements; he has controlled the reproduction and breeding of animal life; he has experimented successfully in the fields of horticulture and agriculture; and in fact he has gone far toward regulating his environment in every particular. He has not, however, applied his science to satisfactory perpetuation of the race.

The term "birth control" is unsatisfactory in many respects. Efforts have been made to use other terms which would be less harsh and more expressive — for example, "prevenception", "planned parenthood", "pregnancy control". So-called birth control has been effectively practiced among certain classes in every country in the world ever since the human race began to think for itself. It has been encouraged in scientific circles in every civilized country in the world, with the exception of the totalitarian or dictator ruled countries of the earth. The class of people in each country, however, who have needed the protection most have had little or nothing done about it.

In North Carolina, the birth rate has always been one of the highest in the Union,

---

Read before the Section on Obstetrics and Gynecology, Medical Society of the State of North Carolina, Pinehurst, May 15, 1940.

never having been surpassed by more than three or four states in any one year. The state naturally has been cursed with one of the dozen highest infant death rates in all the Union. In some years, notably 1938, it almost reached bottom by having only four other states recording a higher infant death rate than North Carolina. It is perfectly natural that where the most babies are born, there the greatest hazards exist.

For twenty-five years the State Board of Health has received pitiful appeals from married women who had large numbers of children and who were still in the middle years of sexual activity, whose health and whose very lives would be endangered by further pregnancies. These appeals have come from all classes of women in every section of the state and from people of all degrees of intelligence. It is unfair to contemplate medical neglect of such women when something could be done to ameliorate their situation. Sterilization is out of the question as a practical measure because of the expense and other difficulties. Practical contraceptive measures, therefore, are the only recourse.

The State Board of Health in its widely spread personal health service through its correspondence over a long period of years has always urged an increased birth rate among those physically and intellectually superior. It has never admitted that poverty alone should be a bar to the birth and rearing of a reasonable number of children in every family otherwise equipped to rear them properly. It has, however, discouraged promiscuous breeding when such high birth rate has been contrary to the physical interest of the people involved and damaging to the whole state.

During the past few years, following the establishment and expansion of clinics or centers for the purpose of offering medical advice and assistance to expectant mothers of the indigent class who are unable to employ physicians and who depend upon midwives, it has been repeatedly borne home to the health officer that some acceptable provision should be made to deal with these married women who are victims of too many pregnancies, particularly when medical indications clearly prohibit further pregnancies.

Much educational work has been done both before and since the Board of Health's program started. For example, the influential North Carolina Conference for Social Service had officially endorsed such a program in 1932. The act of that Conference was fully backed by the State Board of Charities and Public Welfare. Again in 1938, after the program was well under way, that Conference heartily endorsed the work as it was being conducted by the Board of Health. The State Federation of Women's Clubs offered its endorsement April 29, 1938, at a general session in Wilmington. The State Federation of Business and Professional Women passed a ringing endorsement at their general session held at Goldsboro, June 16, 1938. Other groups have been equally as emphatic in their approval of the work being done, not the least in importance being such organizations as the Wake, Forsyth and Edgecombe-Nash Medical Societies.

There exists in the state an organization known as the Maternal Health League, organized in 1935. A number of well known physicians in the state consented for their names to be used as sponsors of this program. The membership has comprised some of the foremost citizens of the state. In response to repeated urging of welfare officers in every section, this organization felt the necessity for an active program to meet the need. The State Board of Health realized that the problems involved are highly technical and for the most part medical, and it felt that any effort made in the field should be not only sponsored but guided and directed by the practicing physicians of the state in direct cooperation with the local health officers. The Maternal Health League readily agreed to these suggestions. The State Board of Health, however, was in no position to do anything about the matter in a practical way until March 1, 1937. At that time Dr. Clarence J. Gamble, then a member of the medical faculty of the University of Pennsylvania, offered to finance a program to the extent of employing a qualified nurse working under the actual direction of the Maternal and Child Health Service of the State Board of Health. This financial aid was offered without restrictions and with no provisos of any kind except that the State Board of Health exercise its own judgment in conducting the enterprise. Therefore, on March 15, 1937, Miss Roberta Pratt, a nurse who is a native of Raleigh, was engaged to cooperate with the various health officers who cared to undertake some kind of a program to meet the need. There was no publicity about it.

Six months after the experiment was started, the director of the Maternal and Child Health Service sent a letter to the health officers notifying them officially of the availability of such a service. That letter, dated November 15, 1937, may be quoted in full as follows:

"Last March, the State Board of Health employed a nurse, Miss Roberta Pratt of Raleigh, to cooperate with those health officers who might want to do something practical toward the control of the birth rate among the diseased of the indigent class. We made no public announcement at the time and none has been made since. We have worked quietly with the medical profession and the health officers in the larger places who wanted this service.

"There is not any argument about the necessity for attempting to prevent further births by the woman who has eight or ten children and who is diseased and whose life would be in jeopardy by further childbearing. The problem is to do something about it before that stage is reached. We are interested only in the medical indications upon which practically every physician would be in agreement, that is, in trying to prevent legitimately further births among women who are bad maternal risks, both for themselves and their babies.

"The Wake County Medical Society and the Forsyth County Medical Society have unanimously endorsed our program. The Board of Health of Durham County and Wake County as well as that of Forsyth has done likewise. The City and County Boards of Health at Charlotte were among the first to put the measures into effect. Efforts are now being carried on in the following places: Raleigh, Durham, Winston-Salem, Charlotte, Henderson, and the Orange-Person Health District with headquarters at Chapel Hill. More or less successful efforts have for several years been carried on in Fayetteville and Asheville by the County Health Departments.

"There has been no effort and there will not be any effort to induce any health officer or any medical society to take action, unless the request comes from the health officer himself and his own medical society. Our work, of course, is more largely experimental in order to try to determine the practicability of any plan of this character. The work is strictly for indigent patients who have not and do not now have the advice of private physicians in these matters such as their more fortunate sisters have always had.

"I want to repeat that the work is being done in strict accord with medical opinion wherever undertaken and through the specific direction of the local health officer. The most far reaching plan yet undertaken in my opinion is that just being launched by the Duke University Medical School in cooperation with the Durham County Health Department. My purpose in writing this letter is, first, to inform you of this program officially, and, second, to express the hope that you will discuss the matter at your convenience with your local physicians and also lend a sympathetic ear to the appeals of the welfare officer at any time that official should appeal to you."

The policy outlined in that letter of acting in strict accord with local medical opinion is still followed by the Department.

As a result of the State Board of Health's open and official recognition of the problem as a part of the public health program, and in accord with the policies advised in the letter sent to health officers, and without any urging from the State Board of Health offices or any other quarter, on January 1, clinic facilities had been established on a more or less permanent basis in fifty-seven counties. This includes practically all of the important cities or towns in every section of the state, with the exception of about three in eastern North Carolina.

There has been little adverse criticism, but commendation has been overwhelming on every hand.

In a report received sometime ago from eighteen counties selected at random, and not including the larger clinics being conducted in Charlotte, Winston-Salem, and other similar places, the health officers reported that a total of 938 women had been carried on their case records for more than a year and had attended the clinics with more or less regularity. 420 of these women were white and 518 were colored. The same reports listed 97 failures, a few of them due to the woman's being pregnant before accepting the protective measures, but most of them reported as due to carelessness or neglect to use the measures selected.

In answer to the question, "What is considered the biggest problem?", nearly every one of these eighteen county departments replied that it was indifference and carelessness, especially on the part of the women who needed these protective measures most. One county report emphasized the lack of nurse personnel needed to follow up the cases admitted to the clinics and to get the most needy cases to the service. The same report emphasized the "moral laxity which does not associate the begetting of children with responsibility for their welfare" prevalent among so many of the Negroes in that county. It is the responsibility of one or more nurses connected with each county department of health to supervise and carry out this work under the direction of the county health officer and the practicing physician in active charge of the clinic.

The methods used and recommended have been left entirely to the local medical societies or the specialists advising with the health officers and the physicians in actual charge of the clinics. In most cases, dependence has been placed on one of various chemical preparations, one of the purposes in the experiment being to try to find out if such preparations could be used practically and successfully. It is very much desired that the wife control the facilities used, and thus be able to protect herself.

In the reports just referred to, a considerable number of complaints about the sponge and powder method were reported, some of the women reporting that it was troublesome and messy, a few that the husband objected, and some complaining of painful irritation.

In practically every one of the clinics where a recognized specialist in obstetrics and gynecology has been the physician in charge, dependence has been placed on the diaphragm and jelly methods. Many of the general practitioners are reluctant to undertake this fitting and prefer to rely on other measures.

The very fact that the North Carolina State Board of Health executive staff was willing to recognize this problem openly and to give it a place, although a small one, in the public health program, has attracted international attention.

It has been utterly amazing to find out that simple honesty and openness in dealing with a vital medical and public health problem should stir up interest all over the world as being something unusual. Owing to some publicity in two widely circulated national magazines last fall, letters still come to the State Board of Health from many other states and from a number of foreign countries, especially South America. Many letters come from physicians, and from health officers of other states wanting to know more about the program.

The action of the State Board of Health in recognizing a medical problem apparent to every thoughtful physician and health officer in the country and putting it in its proper place has served principally to accomplish two purposes in this state.

First, it has encouraged a large number of women of moderate means to consult their physicians more freely for advice and sympathetic assistance; and on the other hand it has encouraged every thoughtful and conscientious practicing physician in the state to give such patients the same careful attention that he would to any other problem arising in his practice.

There has never been any law on the subject in North Carolina. Physicians in this state have always been free to offer any advice or the use of any methods they thought practical in their practice. For a long time many physicians labored under the impression that there was a strict federal law prohibiting a physician even to discuss contraception with his own patients in the privacy of his own office. That was due primarily to carefully sponsored propaganda by one particular organization in the United States of a totalitarian character, and it was based only on a federal law applying to the transmission of obscene literature through the mails. This was an old law enacted in 1873 and was nullified by the action of the United States Circuit Court of Appeals of the Second District in New York State, November 30, 1936. The old law had simply placed the transmission of contraceptive information through the mails in the class of obscene literature.

In only a few states has there ever been restrictive legislation on the subject. A majority of the states have made no mention in their laws of birth control. The two states which have the most rigid restrictive laws are Massachusetts and Connecticut. The Connecticut law which has recently been approved by a belated appeal to the State

Supreme Court stands alone as one of the most drastic and unreasonable laws on any subject ever passed by any American state. It even forbids the private physician in his own office to advise the sterilization of a patient or to advise contraceptives when the patient's very life depends on the carrying out of such instructions. Such a law in the United States at this time is utterly unthinkable. Had the state of North Carolina even discussed such a law, it would have been held up to ridicule throughout the country. The law is more drastic and much more foolish than the celebrated evolution law enacted in Tennessee some years ago.

The State Board of Health has simply acknowledged the need for a medical and scientific approach in this field and is trying to establish such a program. It is undertaking to bring into the sunlight of medical and scientific procedures things that have been thriving in the back alleys, and in such a course it is bound to promote human welfare and to prevent much unnecessary human suffering. It should be plainly stated that the state-wide establishment of these experimental clinics and their gratifying success has been made possible by the industry, courage and cooperation of the city and county health officers, the nurses in their departments, and the practicing physicians working with them, to which should be added the material assistance of the county welfare officers. Also, material support has been given the program by a majority of the members of this Section and by the Department of Obstetrics and Gynecology of Duke Medical School, which has been much appreciated.

Two needs are at present apparent as the next step in this program. The first is for a field worker, a thoroughly competent trained nurse, to work with physicians and health officers constantly, in coordinating plans, preventing abuses, and informing interested and influential people in each locality about the aims and purposes of the program. The second need is for the service of a thoroughly qualified physician on the staff of the State Board of Health to meet with the medical societies or other groups of interested practicing physicians, with the cooperation in an advisory capacity of the obstetricians and gynecologists of the state, in order to advise and assist all such interested physicians on the most acceptable and practical methods for each man to follow in his practice.

Abstract of Discussion

Dr. Oren Moore (Charlotte): It is a new experience in North Carolina to have contraception discussed publicly instead of having it bootlegged, in spite of the fact that there has been no law proscribing such information or advice from physicians or clinics in North Carolina. We have been particularly liberal in our viewpoint in regard to this problem.

The problem is age-old, of course, and has been approached in the past from many angles, primarily from that of the man who wishes to escape the result of his own sex activity. History goes a long way back to describe the ingenious methods that man has devised to bring about these contraceptive practices. Most ingenious is our old friend Casanova, who made a reputation because of his sex activities some centuries ago, and whose method has probably not been improved upon to any great extent. He used a contraceptive diaphragm made from half a lemon, and thereby also increased the acidity of the vagina.

There were other methods being used, and we shan't go into all of them, but some of them were more or less ruggedly individualistic.

We look with considerable scorn, as scientific men, on such things as the Stork Derby up in Canada, when great sums were offered to those happy sorts of people who would produce the greatest number of babies in the shortest period of time, without regard to the bad results which might accrue to those children and to the mothers who bore those children, but in what was a short-sighted, if praiseworthy, attempt to produce a number of children for a given race.

The feeling of nationalism which has arisen with such remarkable speed and to such great proportions since the World War has unquestionably done much to speed up the production of children among nationalistically inclined people, without regard for the fact that they produce those children for exactly the purpose Dr. Cooper has mentioned—to be slaughtered later. A great increase in population is going to end in greater efforts toward expansion, and greater efforts toward expansion are going to end in impinging upon the preserves of the other countries and immediate resistance of other countries to such impingements.

It would therefore be not only a matter of national and state, but also of international scientific study to arrive at some method of birth control which would lessen the number of children being brought into the world, and thereby lessen the conflict which results from over population.

Dr. Cooper has covered the subject thoroughly and completely from the standpoint of a technique of state participation. I have only to approve completely of what he has had to say about our participation in such a campaign, and to second the motion that these health officers and these trained specialists be employed in a supervisory capacity by the state to further this exceedingly important program in the state.

Dr. J. C. Burwell, Jr. (Greensboro): We are particularly fortunate in Greensboro in having a wide-awake city health department. They have had a contraceptive clinic in operation there. Both Dr. Hudson and Dr. Parker have done a remarkable job. However, we have tried to branch out a little bit, and we have run a contraceptive clinic in connection with the prenatal clinics at the Sternberg Hospital and the Richardson Hospital. We have run into a great deal of criticism from the general lay public on that account, because they associate abortions with the contraceptive clinics.

That is a very minor point, but if we are going to make this program successful in North Carolina, I think it is well to bear in mind these minor points so that we can avoid these pitfalls before we get to them.

PREVENCEPTION, THE HEALTH DEPARTMENT AND THE PRACTICING PHYSICIAN

William P. Richardson, M.D., M.P.H.

and

Donald Klaiss, Ph.D.

Chapel Hill

There has been during the past several years an increasing discussion of birth control or preventception as it relates to medical practice(1, 2), and an awakening realization of its importance in connection with maternal health programs(3, 4). The subject, however, has not received the recognition from the rank and file of the medical profession which it deserves.

Gamble(5) and Norton(6) have described the development of a program sponsored by the North Carolina State Board of Health for the dispensing of preventceptive advice through the maternal health programs of local health departments, and Hagood has discussed the implications of the program in regard to population(7).

The present paper seeks to describe the preventceptive program of a rural health department, to analyze some of the conclusions from the first two years' experience and to point out the relationship between prevenception in the public health program, and prevenception in private practice.

The logic of prevenception as a part of the maternal and infant health program is readily apparent if we consider the other phases of this program, and the gaps in it. Physicians and health workers have been trying to avoid disasters of pregnancy, childbirth, and infancy by improved prenatal and delivery care, and supervision during the period of infancy.

The truth is that many of the mothers who constitute the greatest risk, and whose babies have the poorest chance of survival, should never have become pregnant in the first place, since they have a past history or are suffering from present conditions which foretell definite danger. Therefore, it is eminently sound from both the medical and the economic standpoints to utilize the relatively simple and inexpensive technique of prevenception and forestall these dangers entirely.

Although we have no disposition to minimize the importance of economic and social indications, our first concern as physicians and health workers is with medical needs. Fortunately, a reasonable interpretation of medical needs will give us valid indications in many, if not most, instances where at first glance the indication may seem to be social or economic.

Spacing children by at least a three year interval has been shown to decrease decidedly the mortality rates for mothers and babies, and may be considered a primary indication for prevenception. Studies of stillbirths(8, 9, 10) and infant deaths have revealed a large percentage of cases in which no specific cause can be adduced, and the most obvious explanation is that general physical unfitness and nutritional deficiency on the part of the mother are significant etiological factors. Such conditions can be reasonably suspected in women in very poor economic circumstances who have borne two or three children in rapid succession, and careful history and examination will usually reveal sufficient evidence of poor health to make childbearing a definite risk.

Of course the usual medical indications: pelvic disease or abnormality, heart disease,

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Read before the Section on Public Health and Education, Medical Society of the State of North Carolina, Pinehurst, May 14, 1940.

1. Hewitt, H. P.: Preconceptional Care, South. M. J. 32: 417-422 (April), 1939.
2. Dewees, Lovett, and Beebe, Gilbert W.: Contraception in Private Practice, J. A. M. A. 110:1169-1172 (April 9) 1938.
3. Winslow, C. E. A.: Birth Control As A Public Health Problem, Birth Control Review, January, 1938.
4. De Vilbiss, Lydia A.: The Public Health Approach to Contraception, J. Florida M. A., October, 1937.
5. Gamble, Clarence J.: Contraception as a Public Health Measure, Tr. M. Soc. State of North Carolina, 1938, 730-738.
6. Norton, Roy: A Health Department Birth Control Program, Am. J. Pub. Health, 29:253-256 (March) 1939.
7. Hagood, Margaret J.: A State Experiment in Contraception As A Public Health Service, J. Contraception, 4: 103-105, 118 (May) 1939.
8. Adair, T. L. and Potter, Edith L.: Total and Neonatal Mortality with Recommendations for Correction, Am. J. Pub. Health, 26:281-286, (March) 1936.
9. Tandy, Elizabeth C.: A Statistical Study of Stillbirths in Hospitals, Am. J. Pub. Health, 27:161-166 (March) 1937.
10. Dunham, Ethel C.; Tandy, Elizabeth C.; Daily, Edwin F.; and Hayes, Clara E.: Problem of the Causes of Stillbirth, Am. J. Pub. Health, 28:491-498 (April) 1938.

tuberculosis, diabetes, syphilis, nephritis, mental abnormalities, etc., are well recognized. It might be pointed out that in view of the limitations upon the efficiency of preventive measures, the more permanent of these indications call for sterilization rather than prevenception.

Under the policies of the North Carolina health department the function of the health departments in prevenception is to render this service to those patients in whom one or more of the definite indications alluded to above are present, and who, because of economic conditions would not be able to receive this sort of service from a private physician. This means that a large group of women are not eligible for health department service, and therefore must receive the service from their physician if they are to receive it at all.

If we accept as valid the indications set forth, it would appear that it is the duty of the physician or health worker who is in contact with a woman in the childbearing period, particularly if she is recently post partum, to consider whether any of the indications exist, and if so, to recommend preventive measures.

With the present rather inconsistent and scattered use of medically prescribed prevenception it will take some time, and very careful studies, to determine just what effect the consistent prescription of preventive measures will have on maternal and infant mortality, but it is reasonable to suppose that it will be considerable.

We will describe briefly the policies and program of the rural health department previously mentioned, and then give some statistical analyses based on a study of a group of patients from this area, and from an urban area.

Patients are selected, first, on the basis of a definite medical indication. Included in the indications considered are the fact of having borne as many as four children, and the need for child spacing up to three years. Patients also must be economically unable to avail themselves of the services of a private physician for this purpose. They may be referred by welfare or health department personnel, by physicians, by friends, or they may make application themselves. Medical indications are determined by the health officer, and economic eligibility by the department of public welfare.

Since one purpose of the program in this area was the evaluation of the effectiveness of a simple method that could be made available without a clinic through the public health nurses, the sponge-foam powder method as originally described by De Vilbiss(4) was selected. This method makes use of a sponge, which is saturated with water, and a special powder which, when sprinkled on the sponge and manipulated a little, develops a free lather. The active ingredient of the powder is duponol, a non-irritating, actively foaming detergent, and this is prepared with paraformaldehyde in a base of either starch, or sodium chloride and boric acid. We have used both types and find little fundamental difference. The sponge simply serves as a vehicle for the spermicidal lather. It is inserted as far as possible into the vagina before coitus, and removed the next morning.

The materials are distributed by the public health nurse through a home visit, and very explicit, though simple instructions, accompanied by demonstrations on a small plaster model, are given. No charge is made except for the cost of the material, and thus far, by means of help from various sources, it has been possible to furnish it free to those unable to pay the small cost.

The present statistical study is the first that has been undertaken with regard to the North Carolina program, and is distinctly of a preliminary nature. Only a few basic analyses have been made to determine the direction of the program, to indicate some of the possibilities of future investigations, and to secure a rough indication of the acceptability and effectiveness of the method used.

The study is based upon the records of two selected clinics, chosen because they have each served a relatively large number of patients and because their records have been filled out most carefully and completely. These records are kept on standard record forms devised by the State Health Department and the Institute for Research in Social Science.

No tabulation has been made in this study of the economic, educational, or occupational status of the group, but the observation may be made from our knowledge of the general type of clients of the public health clinics that economically they are of relief or near-relief status, educationally they have not progressed far beyond the elementary grade level, and occupationally few, if any, would fall within the white-collar class.

As stated above, one basis of selection of these particular clinics was the knowledge that on the whole their records were rather complete; hence, this is in no way a random sampling of the population. We may note, however, that one of the clinics serves an almost completely rural area, while the other is maintained by a city health department serving an urban, industrial area.

The series consists of 193 cases, divided racially into 66 white mothers, 126 negroes, and 1 Indian. One hundred and forty-two were, so far as could be determined, regular users, and 51 were irregular.

The mean age of the group at time of admission to the clinic was 29 years, the white clients averaging 31 years and the negroes 28.6 years.

Data concerning length of marriage were given on only 144 of the blanks. The mean number of years married for this series was 10.4, with the slight racial difference of 11.3 years for the white group and 9.8 years for the negro.

The fertility of the group is attested by the preclinic average of 5.8 pregnancies per patient during an average married period of 10.4 years.

Preclinic pregnancy rates were determined on a sample of 51 patients according to the method of Pearl. The method calculates the total time the population under study was exposed to risk of pregnancy—that is, total years of marriage experience less deductions for pregnancies—and expresses the rate as pregnancies per 100 person-years of exposure. The preclinic pregnancy rate on the 51 patients was 99.3 per 100 person-years of exposure for the total group—or 80 for the white women, and 115.5 for the colored.

There were a total of 200.6 person-years of post-clinic exposure to pregnancy, and there were recorded 46 pregnancies—13 for white women, and 33 for colored. Twenty-two of the 46 pregnancies were in regular users, and 24 in irregular users.

These figures give the following post-clinic pregnancy rates:

Total—	23	per 100 person-years of exposure
White—	19.2	
Negro—	24.9	
Regular users—	16.9	
Irregular users—	34.2	

It is difficult to compare these findings with similar investigations, but there might be some value in making at least one comparison. Stix(11) reports the experience of the Cincinnati Committee on Maternal Health. The post-clinic pregnancy rates are given for different contraceptive methods. For the diaphragm-jelly method, recommended by the clinic, the rate is 9. For all other types of contraception combined it is 28; for condom 10, for coitus interruptus 38, for douche 36, for other types 21. When we note that these rates are lowered by the inclusion of a large number of white-collar workers and that the rates of manual workers and couples on relief are considerably higher on the whole, we may say that our rate of 23 compares favorably with the Cincinnati experience.

On the basis of the method of calculating prevenceptive effectiveness used by Notestein and Stix(12) the present study shows an effectiveness in the total group of 77 per cent, or 83 per cent for regular users and 65 per cent for irregular users.

Several observations may be made from this study.

1. The sponge-foam powder method of prevenception has been reasonably effective in preventing pregnancies in an unselected group of multiparous women.

2. There has been little objection to the principle of prevenception, and the method selected is acceptable to the great majority of patients. A few patients complain of irritation or other inconvenience.

3. In the great majority of cases where pregnancy has developed in patients using the method, careful questioning has revealed either failure to use the method during one or more exposures, or improper use. This fact has emphasized the importance of proper instruction by the nurse, and strenu-

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11. Stix, Regine K.: Birth Control in a Midwestern City: reprinted from The Milbank Mem. Quarterly, Vol. XVII, Nos. 1, 2, and 4, (January, April, October) 1939.

12. Stix, Regine K., and Notestein, Frank W.: Effectiveness of Birth Control. A Study of Contraceptive Practice in a Selected Group of New York Women. Milbank Mem. Quarterly, Vol. XIII, No. 1, (January) 1934.

ous efforts have been made to simplify and improve the instructional technique.

4. The program of making this method available to carefully chosen patients through the public health nurse as a part of the maternal hygiene program of the health department is practical where the territory served is too rural to allow the patients to be brought in to clinics. From the standpoint of cost, simplicity, and ease of use, which must be primary considerations in a program of this sort, the sponge-foam-powder method is most acceptable; and from the tentative measurement given by this investigation its reliability seems to be relatively high. The chief problem is one of education and motivation of clients on the part of medical and social leaders. This will no doubt be a long and slowly-moving process.

5. It is very difficult to obtain a high degree of cooperation from the group of patients treated. Initial contact is frequently made by the public health nurse at the termination of an already-existing pregnancy, but many of the patients fail to take further responsibility. Because of the heavy case loads of public health nurses, it is impossible for them to check up carefully on patients who take no initiative themselves. Consequently, there is a fairly large number of clients who enter the program but who have no later contact with the clinic or nurse. To this extent the program is ineffective.

6. Since the health department program will reach only the lower economic group, the availability of medically prescribed prevenception for the balance of the population will depend on the readiness of practicing physicians to recognize indications and prescribe suitable preventive methods for their patients.

Abstract of Discussion

Dr. R. W. Graves (Durham): The North Carolina Board of Health birth control program has become notorious by now. It has broken into the **Atlantic Monthly** and into **Life.**

The ideal contraceptive, as you all know, has not yet been found. It has to embrace the following qualities: It has to be readily available. It has to be 100 per cent effective. It must not interfere with the business of coition. I want to warn you that the manufacturers of the contraceptive devices are manufacturing all sorts of things. I wouldn't be surprised if they are not going to injure to some degree the program of contraception throughout this country and throughout all parts of the nation. Some Board of Standardization or some Board of Acceptance is in order.

I was tremendously interested in Dr. Richardson's reference to stillbirth incidence. The relative frequency of coition is important, but I doubt if that is one of the most important factors in stillbirths. I think that some women will carry through pregnancies and some will not. The nutrition factor is perhaps more important in regard to the stillbirth rate than any other one thing.

When people talk of the low incidence of toxemia in Germany during the last war, they lose sight of the fact that there was a 15 to 25 per cent increase of abortion in that country then. Naturally, if 15 to 25 per cent of pregnancies were done away with in abortion, the number of toxemias would be reduced.

I absolutely agree with Dr. Richardson in regard to the increased importance of surgical sterilization in a certain percentage of women.

Such a program as this is successful only if the patients go to see their doctors. If they don't see their doctors and don't go to their public health workers, any program is bound to fail.

That makes us think, whose responsibility is this? Everybody seems to be mixed up in other people's sexual affairs now, for some reason. We frequently find a preacher giving advice about contraceptive measures. The social worker, the biologist, the obstetrician, the doctor, the public health man—all of them have something to do with it, but none assume full responsibility. It may be that soon another type of specialist will be developed—the specialist on marriage. The conference at Chapel Hill and Duke University will probably lead in this direction.

I would prefer not to call it birth control—because that is still bound up with the idea of practicing abortion—, but a fertility clinic.

I urge you to study Dr. Richardson's figures when they come out, because you can't get the full import and significance from what he said today. This is one of the first things that I have seen on such a study. It is a critical analysis. It is a thoroughly worth-while thing and Dr. Richardson deserves all the commendation for his pioneer work.

The obstetricians of the state are thoroughly in accord with what he has said, but we still believe that, in a certain percentage of instances, particularly in a toxemic person and a person with kidney disease, surgical sterilization is the only method that can be used.

Oliver Wendell Holmes said, "I find that the great thing in this world is not so much where we stand as in what direction we are moving." The unrest of modern society has led first to a veiled and then to an open attack upon medicine. Sudhoff wrote, "Medicine is a sacred calling and he who makes it ridiculous is guilty of sacrilege." This thesis is an insecure "shield and buckler" in the face of forces that respect neither morality nor property. Shades of Agnew, Da Costa and Mitchell! to think that a bloc of scriveners or lawyers would dare to question the position of medicine as a profession. Organized medicine has invited the affront by its purblind attitude of self-sufficiency. Let us keep ever before us the watchword of service to humanity. Medicine exists for the benefit of the afflicted and not the afflicted for the benefit of medicine.—W. S. Middleton, M.D. (General Magazine, Univ. of Penna., July 1940.)

APPENDICITIS

*The Two P's and the Highest Mortality in the World**

DONNELL B. COBB, M.D., M.S., F.A.C.S.

GOLDSBORO

With the public there seems to be the general belief that appendicitis is a disease that can be considered lightly. Among doctors there is a disturbing complacency that does not always reflect credit on the profession nor insure safety for the patient. So long as our mortality is the highest in the civilized world, it would seem that few, if any of us, know all there is to know about appendicitis. According to comparative figures, our mortality rate in appendicitis is 70 per cent higher than in Germany, more than 100 per cent higher than in England, and more than 300 per cent higher than in Italy(1). This would seem to be reason enough for us to stop and take stock of ourselves.

No satisfactory explanation for our high mortality rate has ever been forthcoming. Certainly the standards of our profession and our hospital facilities are equal or superior to those of any other country. The fact that the mortality rate in Jamaica and Trinidad is only one-tenth as high as ours can not be taken to mean that the inhabitants of these islands are educated to seek medical advice earlier or that the medical service they receive is superior. We do know that appendicitis is much less common in southern and tropical countries. However, no data are available as to the actual number of cases of appendicitis or the number of appendectomies performed in any country.

Since the intellectual level of our people, the ability of our medical profession, and our hospital facilities compare most favorably with any other country in the world, it would seem only fair to deduce that our high appendicitis mortality rate simply means that in the United States we have more cases of appendicitis—or at least that we recognize and diagnose more cases of appendicitis—than do other countries.

Appendicitis is the most frequent abdominal emergency, and it has most serious possibilities. Every day forty people in our country die from appendicitis(2). At least thirty of these die unnecessarily. They die because the seriousness of the condition is not generally appreciated; because they procrastinate and attempt to treat themselves with laxatives, or to "freeze it out."

Our state, along with every other state, is greatly concerned, and rightly so, over the unnecessary deaths on the highways. Our newspapers often carry bold headlines decrying such a condition and reminding us of the large number who are killed every year, every month. Millions of dollars are spent to make highway travel safer and to impress upon us the necessity to "drive carefully." Yet 50 per cent as many people die unnecessarily every year from appendicitis as are killed on the highways, and little or nothing is said or done about it. Each year we participate in a nation-wide campaign to fight infantile paralysis — "The March of Dimes." Every one of us is interested in such a movement, from our President to the humblest citizen. Millions of dollars are given that this dreaded disease might be brought under control. And yet, the death rate from appendicitis is ten times greater than that from infantile paralysis.

It seems rather queer that our country should lead the world in deaths from appendicitis, when it was an American who first accurately described and named the disease. It was in 1886, fifty-four years ago, that Dr. Reginald H. Fitz, of Boston, published a paper on inflammation of the vermiform appendix, using for the first time the word which he had coined—"appendicitis"(3). Diseases of the appendix have been recognized for almost two hundred years, since Heister described appendicitis in 1753. But it was Fitz's classical description of the disease that caused the attention of the medical profession to be focused upon it. From the publication of his paper, modern knowledge of appendicitis begins. Previous to that

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* The author wishes to acknowledge his indebtedness to Dr. Hubert A. Royster for his permission to use certain facts which are contained in that store-house of information- his Monograph on Appendicitis; and to express great appreciation for the additional help and the advice and constructive criticism which he has always so generously and kindly given.

Read before the Second General Session of the Medical Society of the State of North Carolina, Pinehurst, May 15, 1940.

1. Hoffman, Frederick L.: The Appendicitis Record for 1930, The Spectator, Vol. 127, Aug. 1931.
2. United States Bureau of Vital Statistics, 9:151 (Feb. 26) 1940.
3. Fitz, Reginald H.: Perforating Inflammation of the Vermiform Appendix; with Special Reference to its Early Diagnosis and Treatment; reprinted in Medical Classics, Vol. 2, No. 5, Jan. 1938.

time, appendiceal abscesses had been recognized and drained — notably by Willard Parker, W. T. Bull, and Noyes(4, 5, 6). Lewis, in 1856, reported forty-seven cases of abscess of the appendix, with only one recovery(7). But the general conception of the disease placed it in that indistinct maze of typhlitis, perityphlitis or paratyphlitis, and nearly every one attacked with it died.

It is interesting to note that a disease so entirely surgical in nature was first accurately described and its treatment correctly tabulated by one who was a pathologist and soon to become a Professor of Internal Medicine, Dr. Fitz. Today the successful outcome of a case of appendicitis depends not so much upon the surgeon as it does upon the diagnostic acumen of the medical man who first sees the patient, who recognizes the insidious danger that constantly lurks in an inflamed appendix, and who knows that early removal is the way to prevent unnecessary deaths.

After Fitz showed the way, it was not long until surgeons were removing diseased appendices even before they ruptured. Thomas G. Morton, of Philadelphia, a year after Fitz's paper was published, performed the first successful appendectomy in a case "correctly diagnosed and the operation deliberately planned"(8). Dr. Morton performed this operation "after losing a brother and then a son by this disease, on both of whom he had urged in vain the attending surgeons to operate."(7)

In 1889, three years after Fitz's publication, Dr. Charles McBurney, Professor of Surgery in the College of Physicians and Surgeons in New York City, described "McBurney's point," and reported what he believed to be the first "case where an acutely inflamed unruptured appendix had been removed full of pus."(9) Five years later, in 1894, he described the McBurney muscle-splitting incision(10). Today, forty-six years later, this incision is more extensively used for appendectomy than any other.

Other names that will always be connected with appendicitis are those of Fowler, of Brooklyn, and Murphy and Ochsner, of Chicago(11).

Fowler, Professor of Surgery in the New York Polyclinic Medical School, wrote the first book on appendicitis to be published in America. Speaking before the International Medical Congress in Paris, in 1900, he described the elevation of the upper part of the patient's body to allow the pus from a ruptured appendix to drain down into the pelvis—the Fowler position(12). It seems strange that one who had operated upon so many cases of appendicitis and had taught so many others about it should have succumbed to acute appendicitis himself—an indelible example of the treacherous and deceitful nature of the disease.

Any reference to the progress of knowledge of appendicitis must include two other names, Dr. LeGrand Guerry, of South Carolina, and our own fellow member and dean of surgeons in our state, Dr. Hubert A. Royster(13). These two men have talked and preached on appendicitis in season and out of season, instructing our profession as to the proper treatment and warning the public of its dangers. It was Dr. Royster who, taking as his text the two P's—Purgation and Procrastination—did so much to impress upon the profession and the public the fatality of taking laxatives indiscriminately and the extreme importance of early diagnosis and early operation(14). It is largely because of the untiring efforts of these two men that the Carolinas are two of the three states having the lowest mortality rates in the Union(15). But this is no time to rest upon our laurels, for our mortality is still far too high. Although there has been a

4. Parker, Willard: An Operation for Abscess of the Appendix Vermiformis Caeci, Med. Rec., Vol. 2:25-27, 1867.
5. Bull, William T.: Perityphlitis, New York Med. J., 18: 240-261, 1863.
6. Noyes, Robt. F.: Perityphlitis, Trans. of the Rhode Island Med. Soc., Vol. 2, 495-539, 1877-1882.
7. Lewis, George: A Statistical Contribution to our Knowledge of Abscess, and other Diseases Consequent upon the Lodgement of Foreign Bodies in the Appendix Vermiformis, with a table of forty cases, New York J. Med., Vol. 1, 3rd series, 328-353, 1856.
8. Morton, Thomas G.: A Note upon the Question of Priority as to the First Designedly Undertaken and Recorded Appendectomy for Appendicitis, Med. Bull., Phila., Vol. 24, 1902.
9. McBurney, Charles: Experience with Early Operative Interference in Cases of Disease of the Vermiform Appendix; reprinted in Medical Classics, Vol. 2, No. 5, Jan. 1938.
10. Idem: The Incision Made in the Abdominal Wall in Cases of Appendicitis, with a Description of a New Method of Operating; reprinted in Medical Classics, Vol. 2, No. 5, Jan. 1938.
11. Ochsner, A. J.: The Cause of Diffuse Peritonitis Complicating Appendicitis and its Prevention; reprinted in Medical Classics, Vol. 4, No. 6, Feb. 1940.
12. Fowler, George R.: Diffuse Septic Peritonitis, with Special Reference to a New Method of Treatment, Namely, the Elevated Head and Trunk Posture, to Facilitate Drainage into the Pelvis, with a Report of Nine Consecutive Cases of Recovery; reprinted in Medical Classics, Vol. 4, No. 6, Feb. 1940.
13. Royster, Hubert A.: Appendicitis. Surgical Monograph, New York, D. Appleton & Co., 1927.
14. Idem: Things All Should Know to Prevent Deaths from Appendicitis, North Carolina Health Bull., April, 1938.
15. United States Bureau of Vital Statistics: Personal communication.

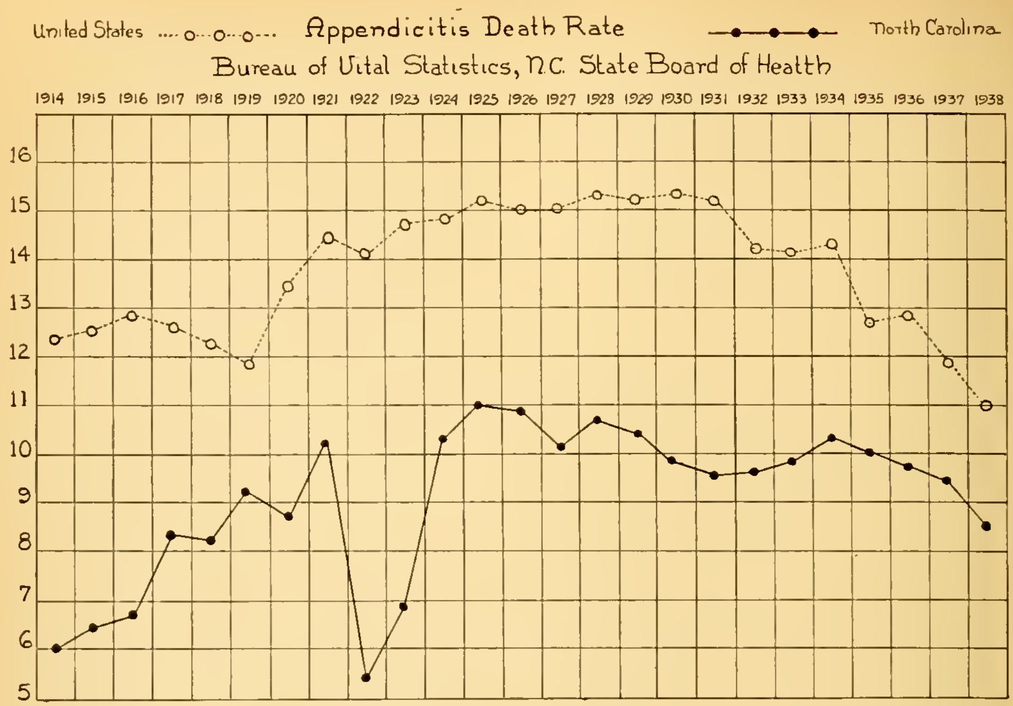

Fig. 1. Comparative Mortality Rate in North Carolina and the United States.

gradual reduction in our mortality rate since 1925, and although we are still well below the average rate for the country as a whole, our rate remains well above where it was twenty-five years ago(16, 17, 18), (fig. 1). The fact that there are more than twice as many deaths from appendicitis in our state today as there were twenty-five years ago is cause for serious thought (fig. 2). As Dr. Royster has so aptly said, "The tragedy of appendicitis is that even one human being should die of the disease."(19)

Symptoms

We are aware that appendicitis is the most common cause of the so-called "acute abdomen". The appendix is attached at its base to the cecum. Its tip may occupy any position. Pointing upwards, it may suggest gall bladder disease or pathology in the right kidney. Pointing downward and lying in the pelvis, it may simulate any of the numerous diseases to which the pelvis is heir. An acutely inflamed appendix situated behind the cecum and lying on the ureter may so inflame the ureter as to produce ureteral colic with pus and blood in the urine. Just as syphilis may mimic any systemic disease, so appendicitis may mimic any intra-abdominal disease, and many diseases outside the abdomen.

Diagnosis

The diagnosis of a "typical textbook" case of appendicitis is often made by the family before they call the physician. But how few of the cases are really typical! There may be no more difficult diagnosis to make, when many or all of the symptoms are atypical. The highest diagnostic acumen is required in these cases, because a positive decision must be reached early; delay means disaster. The famous sextet of abdominal pain, nausea, vomiting, fever, leukocytosis and tenderness gives great reassurance to the diagnosing physician when they are all present and occur in their proper sequence. But it is essential to remember that any one or several of them may be absent; in fact all of them

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16. Norton, Roy: To Avoid Deaths the Public Must Know What to Do Before the Doctor Arrives, North Carolina Health Bull., April, 1938.
17. Stimpson, R. T., Director, Bureau of Vital Statistics, N. C. State Board of Health: Personal communication.
18. United States Public Health Reports, Jan. 20, 1939.
19. Royster, Hubert A.: The Tragedy of Appendicitis, North Carolina Health Bull., Jan., 1931.

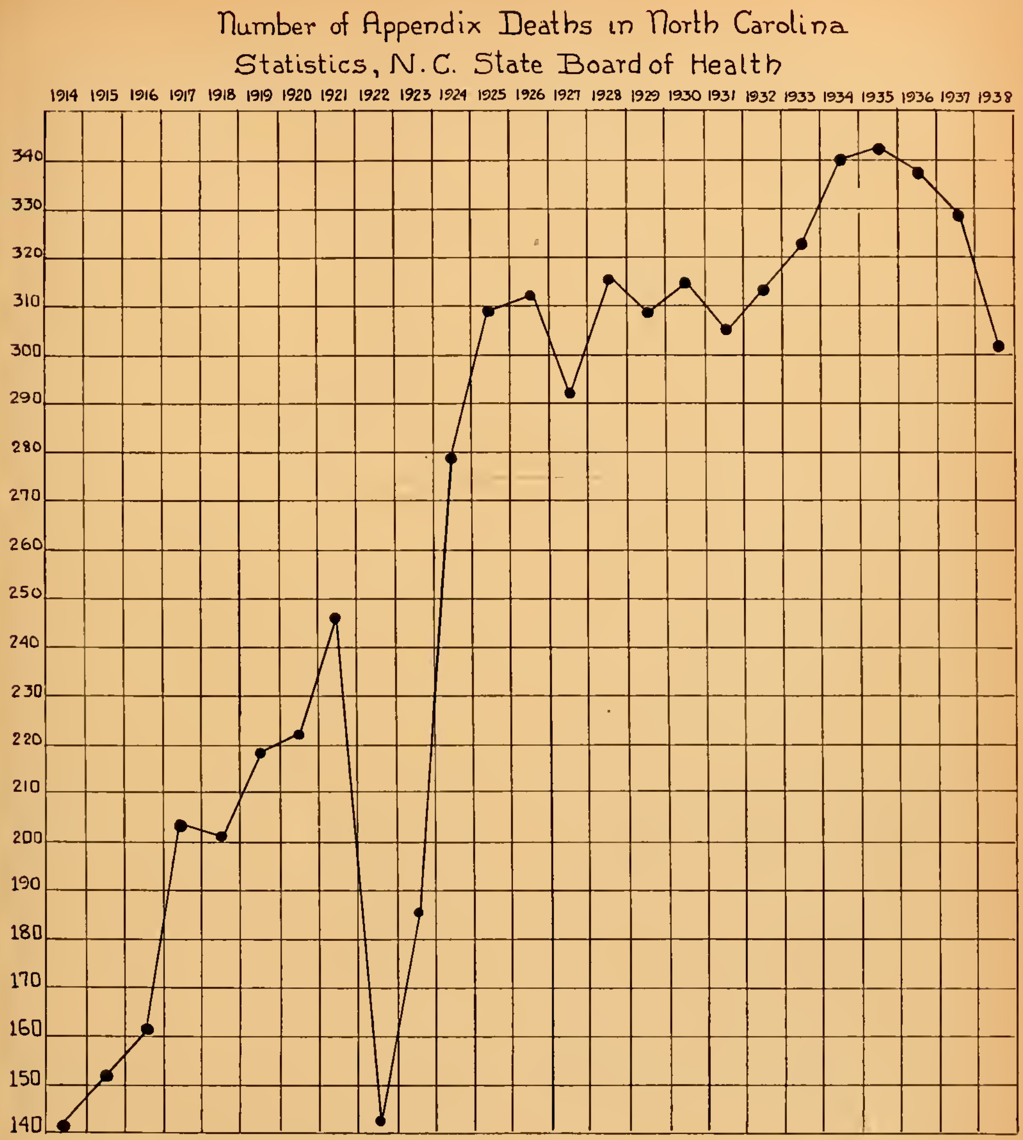

Fig. 2. Yearly Deaths from Appendicitis in North Carolina.

may be absent except pain and tenderness over the appendix. These are always the most trustworthy diagnostic pointers.

Signs

The various signs that have been described as being of aid in diagnosing appendicitis are almost as numerous as the authors who have written on the subject. Many of them are inconstant and impractical. The ones which are generally reliable and helpful are:

1. Tenderness at McBurney's point. As McBurney describes this, it is the point of "greatest pain, determined by the pressure of one finger", and is located "very exactly between 1½ and 2 inches from the anterior spinous process of the ilium on a straight line drawn from that process to the umbilicus."(9) Regardless of the direction in which the diseased appendix may extend,

this fixed point of tenderness is explained by reflexly irritated nerve endings of the eleventh and twelfth dorsal segment on the anterior abdominal wall. It is generally agreed, however, that whereas this point of greatest tenderness is nearly always present, it is not invariably located so exactly in the place McBurney describes.

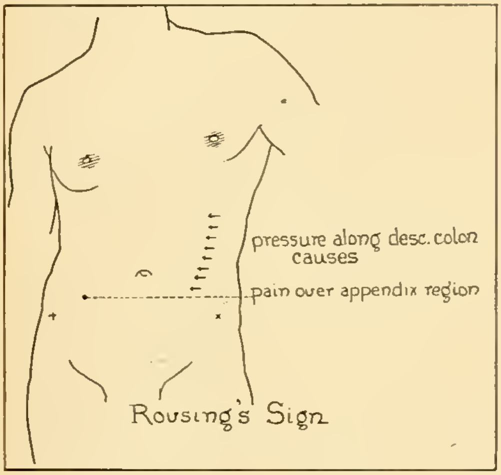

Fig. 3. Rovsing's Sign.

2. Rovsing's Sign (fig. 3). Here, pressure on the left side along the descending colon will cause pain over the region of the appendix, either by reflex action or by pressing gas back into the cecum and distending it.

3. Ott's Sign (fig. 4). This is obtained by having the patient turn on the left side, thus producing a painful dragging sensation on the right lower quadrant as the cecum and inflamed appendix tend to sag toward the left and pull against the mesentery.

Two other signs which are of value, but which are present only after the disease has progressed dangerously far, are:

1. Blumberg's Sign (fig. 5). This is elicited by sudden removal of the hand from the abdomen after pressure has been made, thus producing a rebound tenderness in the appendix region. This sign is indicative of active peritoneal irritation, and means that the inflammatory process has extended through the walls of the appendix and is already involving the peritoneum. The sign is really characteristic of peritonitis.

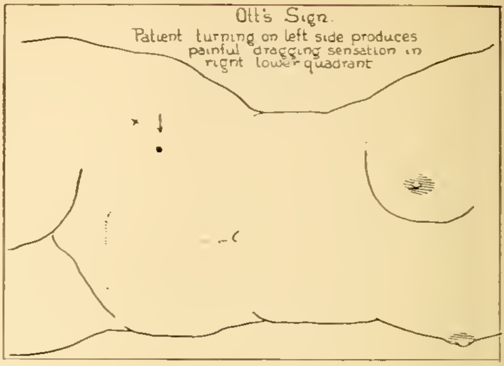
Ott's Sign.
Patient turning on left side produces painful dragging sensation in right lower quadrant

Fig. 4. Ott's Sign.

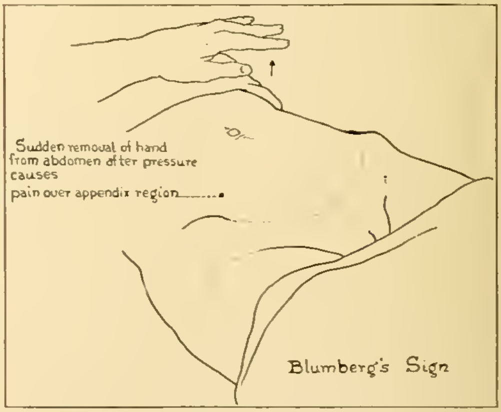
Sudden removal of hand from abdomen after pressure causes
pain over appendix region
Blumberg's Sign

Fig. 5. Blumberg's Sign.

2. Britton's Sign (fig. 6). When this sign is positive, pressure over the appendix causes retraction of the right testicle. This is due to the fact that the innervation of both the appendix and the testicle is from the tenth segment of the spinal cord. This sign is usually present only when the appendix is becoming or has become gangrenous. It is of significance only in the late stages of the disease, and when it is present, the time for further consideration has long past, and early action is imperative if a rupture is to be avoided. In this connection, it is well to remember that an inflamed appendix may cause the right testicle to be retracted without pressure on the abdomen, and that in the presence of a gangrenous appendix, the testicle may already be so drawn up that pressure over the appendix will produce no further retraction. Such a sign is mentioned in Fitz's original description of appendicitis. Naturally this test is not applicable to women.

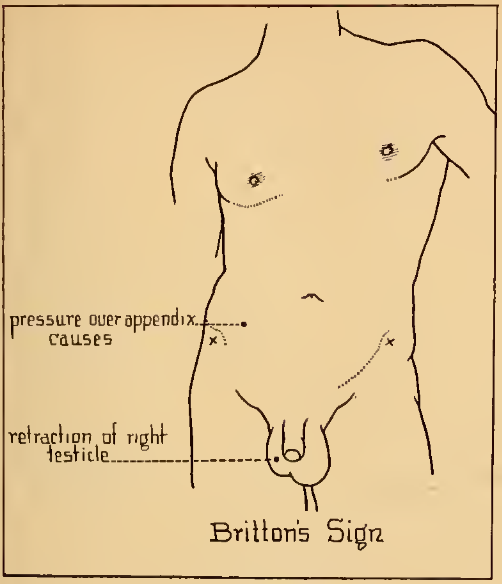

Fig. 6. Britton's Sign.

A brief reference to appendicitis in the extremes of life is pertinent. Let us remember that it can occur at any age, and that at least three cases of prenatal appendicitis are recorded. Two of these were found post mortem, but in the third, the appendix was removed on the day of birth, and the baby recovered(13). The symptoms and signs of appendicitis in the very young and the aged are not so typical as in middle life; the disease is apt to progress more rapidly and the results are not so good. In the very young and the old we should be more on the alert than ever.

Treatment

There should be today universal agreement as to the treatment for appendicitis. In this connection, it is interesting to note that in Osler's textbook on the Practice of Medicine, published in 1892, he states that "the medical treatment of appendicitis can be expressed in three words—rest, opium and enemata." Compare this with the opinion expressed in the last edition of his book! "Appendicitis is a surgical disease—there is no medicinal treatment—many lives are lost by temporizing—the surgeon is often called too late, never too early."

As a matter of interest, compare our idea today of acute and chronic appendicitis with that of Reginald Fitz when he wrote describing and naming the disease. He advocated removal of the appendix when possible during the first twenty-four hours of the disease. To him acute appendicitis meant that the appendix had ruptured and there was a spreading peritonitis; a chronic appendicitis case was one in which the appendix had ruptured, too, but the peritonitis had become localized to form a large abscess in the right iliac region. How far our ideas have progressed, and yet we still lead the world in the mortality rate!

In the prognosis of appendicitis two factors stand out in sharp relief: (1) the part played by laxatives, and (2) the time element.

First a word about that "dagger in the dark", the laxative. It matters not who gives it: whether the doctor prescribes it unwittingly; whether the nurse, whose opinion is so highly respected, advises it; whether the drug store dispenses it to relieve the customer's stomach ache; or whether the parent or the patient, with the cathartic complex, pulls down the bottle of castor oil or the pills from the medicine cabinet. The result is the same—to produce violent peristalsis and most likely to rupture an acutely inflamed appendix. Ninety per cent of those who have a spreading peritonitis have taken laxatives. This means that among those who take laxatives in the presence of appendicitis, the mortality rate is 10 times greater than in those who do not.

In my mind's eye I can now see and hear my professor of surgery in medical school, the late Dr. John B. Deaver, standing beside the operating table and as he exposed a gangrenous and ruptured appendix, dramatically reciting Sir Berkley Moynihan's verse:

> "Purgation spells perforation in an appendix kinked and bad,
> Food and drink worry him, but aperients drive him mad."

And finally, the danger of procrastination. The most treacherous characteristic of appendicitis is the astonishing rapidity with which it can develop alarming pathology—the insidious way in which it can sneak upon its victims. The late Dr. C. H. Mayo wisely said "Operate early in cases of appendicitis for the benefit of the patient as well as the reputation of the physician." Delay is dangerous, as we all know. If a patient has appendicitis and operation is delayed, his chances of dying are four times greater on the second day than on the first, five times greater on the third day, and six times greater on the fourth day of the disease!

Yet how often do we see a patient with symptoms suggestive of appendicitis, but not yet sufficiently defined to permit a definite diagnosis, and how easy it seems to give a hypodermic of morphine and leave with the instructions, "Just let me know if things are not better tomorrow." "Tomorrow" may be twenty-four or forty-eight hours later. And on this second call the appendix may be found to be gangrenous and perhaps ruptured with spreading peritonitis. In this connection it might be well to use another rhyme:

> Morphine spells gangrene in an appendix
> red and sore;
> After the hypo's dangerous sleep it's rotten to the core.

Conclusions

1. We should not counsel delay in cases of early appendicitis, and, against our better judgment, hope with the family that perhaps it will be better tomorrow. Let us have the moral courage not only to advise, but to insist that the diseased appendix be properly and safely dealt with. How simple it is to postpone a decision for action and thus temporarily please our patient! Let us change our perspective and be satisfied to remove or to have removed an appendix that is moderately inflamed, and not feel disappointed if the appendix has not progressed to the stage of gangrene and is just ready to rupture in the next hour or two. Operating on these cases early will be the means of reducing our mortality rate. It is much better and safer to remove an appendix occasionally that is not quite so acute than to postpone the next case too long. As Dr. Charles Gordon Heyd has said, "Even should an individual have an appendectomy upon the erroneous diagnosis, that person can't die from appendicitis. In this condition an error of commission is much safer for the patient than an error of omission."

2. It is our duty to inform and educate the public along the proper lines. Let us not miss the opportunity to impress upon the patient the real danger of procrastination and laxatives. Should the occasion arise, let us be willing to go before certain gatherings—particularly the schools, for it is here that the greatest impression can be made and the greatest good accomplished. Most cases of appendicitis occur in the second and third decades.

It has been definitely shown that people do not die from appendicitis, but from peritonitis(20). Gangrene and perforation cause peritonitis. Delay and laxatives—procrastination and purgation—cause gangrene and perforation. If we eliminate these two, we eliminate the mortality rate. If we instruct people not to take laxatives indiscriminately in the presence of abdominal pain, and if we have the courage to advise and insist upon early removal of the diseased appendix, we doctors in North Carolina can save the life of one person in our state almost every day.

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(20) Bowers, John O.: Personal communication.

HEADACHE

B. W. Fassett, M. D.

Durham

Headache is one of the most frequent disorders to which mankind is subject, and it ranks with the common cold as one of the two great causes of human misery and incapacity. In both conditions the patient is neither sick nor well—not sick enough to cease work, and not well enough to take an interest in his daily duties. It is very fitting that the members of medical societies should, from time to time, revert to this topic; exchange observations and help one another in their search for causative factors.

In considering headaches, we should not be bound by the narrow confines of any one branch of medicine, but should have an accurate knowledge of headaches in general. A large number of our patients come without previous medical advice, and if they do not need our services we should be able to direct them to those by whom they will eventually be treated.

If one had the time and desire to make a comprehensive study of head pains, he would find it of great interest to consult the writings of some of the early physicians and to note the progress made along certain lines of thought, and the lack of progress in others.

Read before the Second General Session of the Medical Society of the State of North Carolina, Pinehurst, May 15, 1940.

In the early centuries, dysentery and headaches were the dread of the Orient. Thus the Talmud quoted a medical authority: "All sickness I can bear except dysentery, all diseases I can overcome except heart disease, all pain I can tolerate except cranial pain."

Hippocrates, the father of medicine, seems to have missed the subject entirely; but Galen, who came along a few centuries later, wrote quite extensively on headaches and differentiated between the intracranial and extracranial types. The first he attributed to irritation of the meninges, the second to pathological condition of tissues outside the cranium. Eighteen hundred years later the famous anatomist, T. Bartholini, supported the same view.

Dr. Charles A. Elsberg says that he is convinced that, with the exception of the meningeal vessels, the dura is insensitive and that it can be stretched without causing pain; but that if intraventricular pressure is suddenly lowered or raised by the removal or addition of fluid or air, typical headache is at once produced. Some maintain that headache is caused by direct vasomotor action on the cerebral vessels; others say that it may be due to any condition that stretches the sheaths of the large arteries and venous sinuses.

In reviewing the various theories attempting to explain head pains, one wonders that none offers a satisfactory reason for the fact that the same chain of events will lead to severe headache in one patient and not cause headache in another. This cannot be explained by the nervous make-up of the individual, because some neurotics never complain of headache, while others, in the best of physical and mental health, have headache from the slightest cause.

When a patient comes for examination, with head pain as his complaint, our success in determining the causative factor depends largely upon the thorough, painstaking effort which we put into the examination. Our first step is to obtain a complete history; for in a large number of cases our diagnosis must rely upon the statement of the patient. It is important to know his age, occupation, the number of hours he works and the conditions under which he labors. We next ascertain how long he has been subject to attacks of headache, how frequent they are, what time of day or night they appear, what are the hours of their greatest intensity, and when they naturally disappear. What is the location and character of the pain? Is it brought on by use of the eyes? If so, does it subside after a short rest? Has the patient recently had a cold or consulted a physician for any sickness? Are the headaches periodic, and if so, is there a family history of similar attacks? Are they accompanied with vertigo, nausea or vomiting? What medicines have been taken for pain, and in what quantities? Much has been said about the bad effects resulting from the too-frequent use of patent headache remedies, but there is nothing that obscures symptoms and renders the patient as completely non-cooperative as the too-often prescribed combination of codeine and aspirin.

In a large percentage of cases it is difficult to obtain a helpful history. For this there are many reasons. The first I might mention is that the patient takes it for granted that a profession, able to cope with serious diseases and major surgery, should be able to cure so simple a thing as a headache without any examination and certainly without any suggestion from him. A second reason is that he is unaware of the multitude of conditions and diseases that can cause a pain in the head. In other cases, a helpful history is hard to obtain because it has become a habit with the patient to exaggerate his suffering. We ask him when the head pains most, and his reply is, "It just kills me all the time." On further questioning we find that he slept soundly the previous night. Why some are so reluctant to cooperate is beyond our comprehension.

In cases where the patient is unable to give any helpful information concerning the headache, and I can not find a definite cause, I request him to discontinue all pain-relieving medicines and to chart his headache over a period of a few days, noting the time it begins, when it naturally subsides, and what he may have eaten or done out of the usual routine before the attack. When he begins to realize that his cooperation is essential to an early and correct diagnosis, it is often surprising to see how his memory will improve, so that he can supply off-hand the facts that are needed.

Some time ago I was requested to see a student nurse for a persistent headache, following a severe cold. This patient was so completely doped that it was impossible to say what she did or did not have. A laxative was ordered, and she was requested not to allow any pain-relieving medicine to be given before my next visit. Twenty-four hours later I inquired of the nurse in charge as to the condition of the patient. The reply was, "She had no pain today until just a little while ago, when she said her head hurt some; so I gave her half a grain of codeine."

The nurses are not the only ones guilty of over-dosing patients. At the time I was visiting this patient, I was requested to see a young lady sent in by one of our internists. She had been there only two days, but was already completely narcotized. Codeine and aspirin had been ordered p.r.n. When the stomach finally rebelled she was given amytal until she became drunk. It is not to be expected that any patient in this condition would be able to give any information of value in making a diagnosis. The two patients referred to needed only to be rescued from their friends.

The importance of a careful history of the headache is well illustrated in this case. A lady, thirty years of age, came to Durham seeking relief from a headache which had persisted for some time. From the description of the physical examination and the time which it consumed, there was no doubt as to its thoroughness; but in the search for a focus of infection, the original complaint was side-tracked in the mind of the examiner. The patient was advised to have all teeth extracted and tonsils removed. This advice was followed, but the headache remained. The patient then visited her family physician, who lived in a nearby village. After listening carefully to a description of her headache, he said: "From your description of the headache and the circumstances under which it occurs, I believe your trouble is due to your eyes." His diagnosis was based entirely on the clinical history of the headache, rather than upon physical examination or laboratory findings, and it was found to be correct. The physician who has learned how to interrogate his patients to find the precise character of any abnormal sensation that they experience, has traveled far toward success in his diagnostic work.

In some cases it may be necessary to make a complete physical and neurological study, together with the help of the laboratory, x-ray, ophthalmoscope and every known aid to medical science. The extent of the examination must be governed by the experience and judgment of the examiner.

A few days ago I inquired of a pediatrician what were the principal causes of head pains in childhood, and his reply was: "Otitis media, sinus infection and meningitis." He also said, "Heredity must be considered, for we inherit not only the tendency to head pains but the factors which cause them—ocular, nasal, dental and other defects." He stated that puberty is a common time for headache, migraine and other neuroses to develop.

The gynecologist tells us that uterine disorders are frequently the cause of the intense headache which is felt in the top of the head, and that puberty and menstruation accentuate pain. He emphasized the fact that headache of the menopause is common in women between the ages of forty and fifty. At this period there are two distinct groups in which headaches occur. The hypothyroid group is characterized by a dull band-like pain encircling the head, by fatigue, sluggish mentality, lack of energy, sub-normal temperature, low blood pressure, slow pulse and low metabolism. The hyperthyroid group is associated with the classical disturbance of the menopause—hot flashes, nervousness and headache.

The headache occurring with regularity during the menstrual cycle is a part of the general ill feeling experienced by some at that time, but the dreaded premenstrual headache has an entirely different basis. It may start at puberty and be present only at the premenstrual period. With some it may appear at the first pregnancy and become worse with each succeeding pregnancy; with others it may be entirely absent at this time. Such headaches are the result of over-secretion of the pituitary, which, in turn, is caused by a deficiency of estrogenic hormone. This type of pain is not relieved by headache remedies, but disappears when the flow is established. A characteristic of pituitary headache is that it may be stopped by lying down, but reappears when the patient sits up.

The urologist was the next to be called upon. He said that the causative factors of headache occurring in his practice were any of the infections of the urinary tract, and that headache, or a tendency to headache, coming on after forty years of age is strongly suggestive of nephritis or syphilis. The syphilitic headache, most frequently seen in middle age, varies from a mild discomfort to a racking pain which nearly crazes the victim. Its chief characteristics are its intensity and persistence, with nocturnal exacerbations. The headache from nephritis, with its accompanying uremia, vascular changes and hypertension, is present on awakening and wears off as the day advances.

The surgeon says that practically all head injuries are followed by headache. The cause of pain in head injuries is generally considered to be due to increased intracranial pressure; but in fractures of the base of the skull, with leakage of cerebro-spinal fluid, we will find a reduction in the intracranial tension, and severe headaches similar to those that often follow lumbar puncture.

Brain tumor is the second most important surgical cause of headache. Whenever we get a history of increased frequency and severity of headache which awakens the patient from early morning sleep, and is perhaps associated with vomiting and failure of vision, we should think of this possibility.

The internist has the widest field from which to draw his cases. He tells me that constipation is a common cause of headache, and that daily movements are no indication of bowel health. Of the headaches attributed to the gastro-intestinal tract, functional disturbances rather than organic diseases are the most frequent causes.

Headache may be the first symptom in typhoid fever, malaria, smallpox, and many of the acute infections. Head pains are often due to fatigue, hypoglycemia, allergy and exogenous poisons such as anesthetics, atropine, carbon monoxide, alcohol and tobacco. The headache from tobacco may not be due to the nicotine content, but to an unknown substance to which some are allergic. A headache which the internist frequently sees is the hypertensive type. It is a dull pain which centers in the occiput, but may affect the whole head; it is present when the patient awakens and disappears during the course of the morning, recurs daily for a period and then disappears temporarily. These headaches may not coincide with the variations in the hypertension, but the sudden rise in pressure is apt to be accompanied by a severe attack. Some patients with marked hypertension may never have headache; so it would seem that some other factor than mechanical elevation of pressure is present.

The neurologist finds that headache is a common symptom in epilepsy, and that it may be caused by insufficient sleep, worry and anxiety—the severity of the pain depending upon the resistance of the nervous system. It is frequent in hysteria, and may be general in character, but is more often occipital. It is easily distinguished by its intensity and the hysterical syndrome.

Chronic headaches persisting for months, becoming worse in the day, with complete ease at night, are exhaustion pains due to neurasthenia. A characteristic of this type of headache is that it disappears when some other interest attracts the attention of the patient, and reappears when the stimulus is withdrawn.

The cause of many persistent headaches that will bear repetition and special emphasis, is worry. If you have been diligent and tactful in your examination, and have inquired if there have been circumstances to disturb your patient's peace of mind, you will have his complete cooperation, and will often find that the onset of the headache will correspond to the date of some great mental disturbance. It is sometimes hard to define the difference between a headache due to worry and one which may be due to a psychoneurotic condition. When we get a true history of a psychogenic case, we may find that what he called a headache was only "a queer feeling, a sense of drawing, pulling or burning." Another case may describe the pain as uninterrupted or continuous, and say that he felt as though something was being driven into the head or that it was going to explode.

The following is one of several similar psychogenic cases which the ophthalmologist sees each year. A boy from the country, poorly advised and without proper education, entered a commercial school. He had high aspirations, but lacked capacity for development. He could not keep up with his classes, and he became discouraged, homesick and worried. He was brought to my office by the anxious father, who stated that the boy could not read more than two or three lines without developing an intolerable headache. A small error of refraction was present, but glasses were not needed. Glasses are beneficial in many nervous conditions, but they will not rectify the maladjustments of life nor compensate for lack of mental capacity. This boy's need was competent advice to help him select the vocation for which he was best fitted.

The rhinologist reaps his harvest of headaches during the winter months when head colds and their sequelae are prevalent, but no season is entirely exempt. The characteristic of nasal headache is that it appears at stated times of the day and almost never at night, unless empyema and obstruction are present. The pain of maxillary sinusitis is usually supra-orbital, and if a severe supra-orbital pain which is unilateral should develop after a cold has subsided, it would be strongly suggestive of antral abscess. If, however, the pus is under pressure, the pain may also be referred to the entire side of the face and teeth. Frontal sinusitis is not as frequent, but the pain is also supra-orbital, and shows marked periodicity. Pain from the anterior ethmoids is deep between the eyes, while that of the posterior ethmoids and sphenoid is referred within the ear, or back of it, and sometimes to the occiput.

The subject of sinus infection has seized the public imagination to such an extent that patients are constantly presenting themselves with this self-made diagnosis firmly established in their minds. No inflexible rule holds for the differentiation of nasal headache from any other, and a diagnosis can be obtained only by careful history and local inspection of the nasal cavity, with transillumination, x-ray and irrigation of the sinuses. No operative work should be done on the sinuses until a definite reason is found. Unless this policy is strictly adhered to, we will add new symptoms to the old, and the patient will be made more uncomfortable than before the operation.

We have considered sinus infection a surgical disease for such a long time that we have almost lost sight of the value of medical treatment. Some patients complain of a severe supra-orbital pain, which appears at a definite time each morning and subsides in the late afternoon. Examination finds the sinuses perfectly clear, and the nasal membranes may present a normal appearance. After ascertaining the time when the pain usually occurs, I give two grains of quinine and five grains of aspirin one hour before the expected onset. This is repeated twice, at three hour intervals; then no more is given until the following morning. The result is that the pain the first day will be an hour later in appearing, and will disappear earlier in the afternoon. The second day the pain will be greatly lessened, and by the third day it will be practically gone. For this treatment to be effective it is necessary for the patient to receive the quinine and aspirin an hour or more before the expected onset. This treatment is not a "cure all"; but if it fails we usually find that pus is forming and is under pressure.

I do not know that the beneficial results in this form of treatment are due to any specific action of quinine; the benefit observed may be due entirely to the fact that aspirin and quinine have a slight analgesic action, and when given an hour or more before the usual pain, they retard the onset and in this way break the headache habit.

The following case serves to illustrate. On April 17 of this year, Mrs. R. K. P. of Durham consulted her family physician for headache of three days' duration. She was referred to an optometrist, who fitted her with glasses. After wearing these for ten days and getting no relief, she came to my office. I listened to an account of her trouble, then asked when the headaches occurred. She replied that they came on shortly after sunrise and gradually disappeared after the turn of the day. This type of pain is typical of sinus infection. The sinuses appeared clear, and she responded promptly to medical treatment.

A few days ago I heard an ophthalmologist make the statement that ninety per cent of headaches are due to errors of refraction. In marked contrast to this, we find those who claim that if the patient has a well balanced nervous system, errors of refraction alone are not an important cause of cranial pain. The truth is somewhere between these two extremes. An error of refraction which produces intense headache in one person may not cause any discomfort whatever in another; it has also been noted that headache and irritated lids resulting from refractive errors are not commonly associated in the same individual.

Headaches due to refractive errors are usually frontal, while those due to imbalance of the extra-ocular muscles are occipital. The smallest defects of the ocular muscles may cause severe headache in a person with an unstable nervous system.

The perfect eye is the exception, and the symptomatology is often the best indication as to whether or not glasses will give relief from headache. There is no way of determining definitely from eye examination alone, for headache is not always a measure of functional defect but a feature of the patient's make-up or individuality. The worst headaches will often be found in those with comparatively low refractive errors.

If the family physician elicits from the patient that the headache is made worse by reading or sewing, it is not always correct to assume that the eyes are at fault; for a pre-existing headache, regardless of cause, is made worse by physical or mental work. On the other hand, if he has secured a complete history from an intelligent and co-operative patient and finds that the attack of headache is brought on by use of the eyes for near work, and is relieved by rest of the eyes, then he will seldom be disappointed in the result of refraction.

The pain of acute glaucoma and iritis is sometimes mistaken for neuralgia, and the eye may be lost before medical attention is sought. Any severe headache of the temporofrontal region, in a person over forty, should cause one to suspect either of these diseases.

A type of headache very common among women, and seldom seen in men, is what is known as muscular tension, rheumatic, fibrositic or nodular headache. It is commonly found among stenographers and those who are forced to hold their arms and shoulders in a certain position for long periods. It is caused by an inflammation of the fascia or muscles of the scalp and of the nuchal region. The pain is superficial, it begins in the back of the neck, and in severe cases radiates along both sides to the forehead. The neck is stiff, and rotation of the head is painful. When the back of the neck is palpated, the muscles will often be found tense, with nodules and tender spots.

The pain is made worse by tension or cold drafts. Most of these cases are improved by rest and relaxation. Prolonged application of hot packs and light massage is usually effective. In all such cases, foci of infection should be looked for.

There is another type of head pain which is commonly known as sick headache, or migraine, and it differs very materially from the various head pains which have previously been mentioned. Its first appearance is usually between the ages of eight and sixteen. It comes on periodically and lasts from one to three days.

In most cases of migraine, there is a hereditary factor and it should not be confused with the ordinary functional type of headache. The onset is usually in the early morning, soon after rising, and is often preceded by an aura, vertigo, flashing of sparks or blurring of vision; after a few minutes this is followed by a dull pain in the region of the eyes. In an hour of so, when the pain has reached its maximum, nausea develops, often associated with vomiting. The patient seeks a darkened room and lies in a somnolent state. Although quiet and drowsy, he describes the pain as unbearable.

Some of the factors which determine the frequency of such attacks are as follows: hereditary tendencies, over-work, irregular hours, partaking of food to which the patient is allergic. As a general rule, the better the physical and mental health and the less the patient worries, the less frequent are the attacks.

In some women the sick headache comes on only at the time of menstruation, and such headaches usually disappear at the menopause.

The following case illustrates a form of migraine which we frequently see: A public health nurse in my office a few days ago remarked that she had one of her awful headaches that morning, and two B.C.'s were necessary before she could go to work. I asked how long she had been subject to these attacks, and she said she could not remember the time when she was not subject to them. I asked if any of her relatives had similar attacks, and she replied that her mother had them until she began to get old. I informed her that when she became forty or fifty her attacks also would probably cease. On being asked why she was wearing glasses, she said that when she was without them, she had a different kind of headache. In other words, this patient had two separate and distinct headaches: the one due to refractive error and relieved by use of glasses; the other, to this present time, an incurable migraine.

Notwithstanding the promising results from the newer drugs used for the relief of migraine, it still remains largely an unsolved problem. The general health of these patients should be carefully guarded, and every diagnostic means known to the science of medicine should be used to uncover the exciting cause and to render the attacks less frequent and less severe.

In recent years an interesting addition to the possible causes of migraine and of other forms of headache has been offered by the allergist. The possibility of allergy as a basis for the disorders should be frankly recognized.

Conclusion

In conclusion may I state that one should first get whatever information the patient himself can supply, as the history is likely to be the most helpful and important step in the diagnosis.

Many patients are referred without any examination; therefore, may I urge that at least this one question be asked: "When do the headaches occur?" If he replies that they awake him in the night or early morning, then think of syphilis, nephritis, hypertension, vascular changes, brain tumor, intemperance, interrupted sleep. After the eyes have been rested all night, the chance of the headache's being due to refractive errors or muscle imbalance is less than one in a thousand.

Any headache so severe as to cause a patient to consult his family physician deserves careful attention. If every case were to receive a careful diagnostic study, it would go a long way towards obviating the migratory excursion of the patient from one possible source of relief to another, which in the end is little economy to the patient and less credit to medicine.

The Mental Element in Disease.—The application of psychotherapy is indicated for every patient regardless of the disease. There is a mental element in every disease. Furthermore the psyche represents the summit of integration and the cortex has an intimate connection with all organs of the body. Reassurance and gaining of confidence are the starting points of psychotherapy; only after this has been accomplished should psychic treatment of a specific nature be taken up.—Soma Weiss, M.D.: The Medical Student Before and After Graduation, J. A. M. A. 114:1715 (April 27) 1940.

FIBROUS CAVERNOSITIS

(Peyronie's Disease)

Robert W. McKay, M.D.

Charlotte

In recent years the layman has been made "lump conscious" by the medical profession and the lay press in the campaign against cancer. It is only natural, therefore, since the penis is one of the organs most frequently handled, that any lump or abnormality therein should be quickly noticed.

Fibrous cavernositis was first described by Peyronie(1), the court physician of Louis XV, in 1743. One hundred years later, in 1847, Record gave a complete description of the condition with theories as to its origin and treatment. Since that time the condition has been frequently described by various authors, notably Kretschmer and Fister(2), who in 1926 gave a complete description of the subject, listing 200 cases. Burford(3) in 1940 brings the subject to date with the compilation of approximately 600 described cases.

The condition is not a frequent one; therefore, when it occurs, its immediate recognition is extremely important both to the patient's peace of mind and for the therapeutic advice that should be given.

The condition consists of a lump which spontaneously appears on the dorsum of the penis in any position from the tip of the glans back to the suspensory ligament. In most instances its onset is gradual and insidious; however, in three of the eight cases which we have seen in our practice, the patient complained of definite tenderness in the lump when it was first noticed. Occasionally the first abnormality the patient notices is a distinct angular deformity which appears when the penis is erect, and subsequent palpation discloses the nodule.

The nodules may be single or multiple, and usually lie along the mid portion of the dorsum of the penis where Buck's fascia is reflected downward over both lateral corpora in elastic sheaths.

On physical examination the skin overly-

Read before the Section on Surgery, Medical Society of the State of North Carolina, Pinehurst, May 14, 1940.

1. La Peyronie: Memoires de l'Academie de Chirurgie, v. ii, p. 318.
2. Kretschmer, H. L., and Fister, G. M.: Plastic Induration of Penis. Report of 16 Cases, J. Urol. 16:497, 1926.
3. Burford, E. H.: Fibrous Cavernositis, J. Urol. 43:208-218.

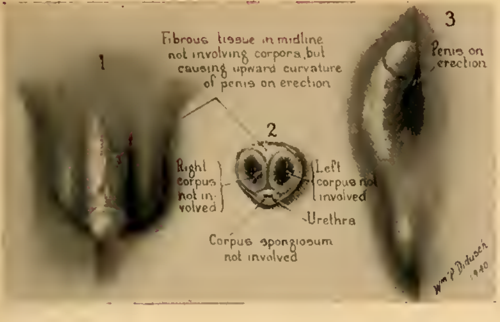
1
Fibrous tissue in midline not involving corpora, but causing upward curvature of penis on erection
2
Right corpus not involved
Left corpus not involved
Urethra
Corpus spongiosum not involved
3
Penis on erection
Wm P Didusch 1940

Plate I. Figure 1. This area of fibrous cavernositis or Peyronie's disease shows the location of the fibrous nodule plaque which occupies Buck's fascia on the dorsum of the penis. Figure 2 shows a cross section showing the fibrous plaque, the two lateral bodies, and the urethra. Figure 3 shows the angular deformity of the penis caused by the lack of expansion of the fibrous areas when erect.

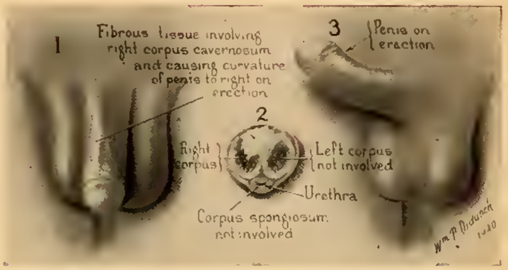
1
Fibrous tissue involving right corpus cavernosum and causing curvature of penis to right on erection
2
Right corpus
Left corpus not involved
Urethra
Corpus spongiosum not involved
3
Penis on erection
Wm P Didusch 1940

Plate II. Figure 1 shows the location of the plaque in the right lateral corpus; the left lateral corpus is not involved, but the fibrosis has extended down into the spongy body. Figure 2 shows a cross section of the above. Figure 3 shows the deformity of the penis bending to the right caused by the plaque in the right lateral corpus.

ing the firm and elastic nodules is freely movable. They are not sharply outlined, but are easily differentiated from the soft lateral erectile bodies of the penis and are usually not tender to palpation. Later on in the disease the nodules may assume a bony or cartilaginous character.

In our experience, when the patient was first seen, the lumps had attained their maximum size and did not tend to increase further. There have been numerous cases reported in which over a period of time they have spontaneously disappeared.

It should be emphasized, however, that the most frequent cause of the patient's presenting himself for examination is the fact that he feels a lump in his penis which causes a deformity when the penis is erect, making intercourse either most unsatisfactory or impossible.

Melancholia and severe psychic upsets are quite common with the condition for obvious reasons, and many suicides as a result have been reported in the literature. Some were probably occasioned by the physician's erroneously telling the patient he had a malignancy.

Very little is known concerning the etiology of the condition. It is only natural that the older writers on the subject should attribute it to venereal diseases, with which it probably has no connection. It is rather significant that a number of patients who have this condition also have Dupuytren's contraction. Some authors mentioned the fact that frequently soldiers develop fibrous nodules from firing rifles and that cowboys develop fibrous nodules on the inner side of the thighs from the trauma of constant horseback riding. With this in mind analogously it has also been suggested that the origin of the condition is traumatic. Suffice it to say that its origin is purely a matter of conjecture.

It is again emphasized, because this condition is rather rare, that the physician should be able to recognize it when it appears in his practice. This was recently brought forcefully home to us by the case of a middle-aged patient who reported that he had had a complete radical operation for cancer of the penis and had been absolutely cured of the horrible malady which we had advised him to leave alone. Its differential diagnosis should not prove difficult. It is quite easy to differentiate it from venereal ulcers, as the condition never ulcerates and the skin over the nodules is freely movable. It is always situated in the fibrous covering of the lateral bodies of the penis and not in the sheath of the urethra; therefore, diseases of the urethra are quite easily ruled out.

The deformity of the penis when erect is quite easily distinguished from chordee caused by urethral stricture which involves the corpus spongiosum. In true chordee the penis is bent forward at an acute angle, whereas in Peyronie's disease the penis bends backward or laterally.

When erection occurs and the lateral bodies of the penis are distended with blood, there is some concomitant elasticity and

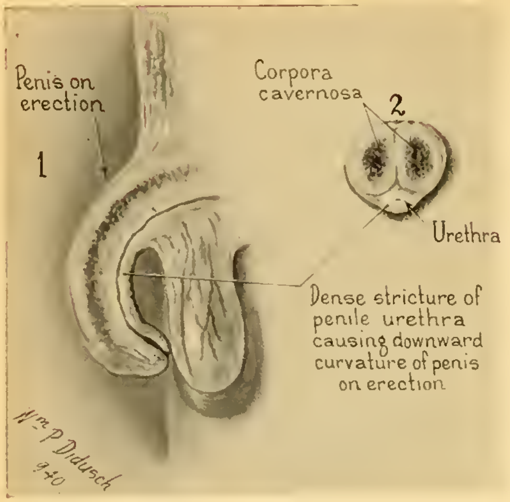
Penis on erection
1
Corpora cavernosa
2
Urethra
Dense stricture of penile urethra causing downward curvature of penis on erection
Wm P Didusch
940

Plate III. Figure 1 shows a typical chordee caused by the lack of elasticity in the corpus spongiosum surrounding the urethra, originating from urethral stricture and fibrosis. Figure 2 shows the corpus spongiosum around the urethra, and not the lateral bodies, being involved by the fibrosis. The above plate is intended to illustrate the differential diagnosis of the two conditions, chordee and Peyronie's disease.

stretching of Buck's fascia. When fibrous cavernositis occurs, the area occupied by the nodule does not expand, and hence the deflection occurs, the penis bending toward the side of the nodule.

The histopathology of these nodules, when they are removed, shows them to be composed of fibrous tissue similar to keloid formation. One writer on the subject is of the opinion that the vascular sheaths of the small blood vessels constitute the origin of the indurated plaques. There is no evidence either from microscopic or gross pathology that the lesions eventually undergo any malignant changes.

Since the unfortunate patient who has Peyronie's disease usually has a marked psychic upset because of his sexual failures and the fear of malignancy, it is quite important that his physician fully explain to him that the condition is not malignant; that in most cases it is self limited and will not progress; that intercourse while the condition is present, provided the tenderness has disappeared, is not contraindicated; and that medicines by mouth will not help him. It should also be explained that surgery is not indicated and that, if it is carried out, it will probably prove to be harmful instead of beneficial.

As to the treatment of the condition, the long list of therapeutic agents indicates that none of them are specifically efficacious. Among those mentioned are painting the nodules with iodine and like drugs, giving iodides and arsenic by mouth, hypodermic injections of fibrolysin, and treatment with various electrical devices, including diathermy.

In this connection, we have seen two cases, excluding the patient who had total ablation, operated upon in another clinic and the nodules excised. In both instances the end results of the operations were failures, the chordees being more exaggerated and areas of scar tissue in the wound speedily recurring.

The only gleam of hope in its treatment is the recent report of Burford, in which he described 18 cases treated with radium plaques. We quote herewith his technique.

"Most notable results, however, seem to be obtained by x-ray and radium, or some combination of these two attacks. We have employed the radium plaque almost exclusively. One must expect some degree of skin irritation or even a burn with the use of the radium plague. From one to three needles of radium element, screened by one millimeter of lead placed parallel to one another, separated by approximately one quarter inch, and the whole screened by one millimeter of rubber, constitute the plaque used. The average exposure has been one hundred and fifty mg.r., the minimum sixty-seven and five-tenths and the maximum three hundred. The number of individual treatments has also varied. Fourteen lesions were given but a single exposure each, while five lesions were given two exposures each. Two of the latter were on the same person, the lesions occurring in different locations on his penis and years apart."

Burford reported thirty-nine per cent of his 18 cases cured as a result of this treatment, forty-nine per cent improved, and sixteen per cent unchanged.

Of the eight cases which have come under our observation in private practice, we have referred four cases for treatment by the radiologist. In all four cases the areas have definitely been softened by radiation, and the deformity, when the penis is erect, has been largely cured. All of these cases have been treated within the last six months, as they were brought back for radiation since the report of Burford above.

Of the eight cases mentioned above, one elected (probably unwittingly) total castration. In the other three patients, the condition has remained stationary and they have refused to return for treatment by x-ray.

In conclusion we would like to emphasize that while the condition is not common, it should be clinically recognized, so that the patient may be comforted with the knowledge that his condition is not malignant and that it probably will not be progressive. He should also be advised that its treatment, while not specific, should be placed in the hands of a radiologist.

Abstract of Discussion

Sidney Smith (Raleigh): I appreciate very much this opportunity of discussing Dr. McKay's paper. He is to be congratulated on presenting a rather unusual condition in such an interesting and instructive manner.

Fibrous cavernositis or Peyronie's disease may be divided into two classes for discussion. The primary type occurs usually in middle or later life, resulting in varying degrees of fibrosis of the sheaths or intracavernous septa of the cavernous bodies. The secondary type is most commonly seen following a long-standing periurethritis from gonorrhea. It may be due also to syphilis or injury and wounds of the penis.

Of three primary cases observed, the youngest was forty-five and the other two were in the sixty to seventy-year group. In each instance the contraction and curvature of the penis plus pain and impotence brought the patients in for examination. The secondary cases have followed no particular age group and have varied greatly in the severity of the condition. The clinical picture is aptly described by Johnson in Morrow's Genito-Urinary Diseases (1893) as follows: "The fibrous wall of the corpora cavernosa was irregularly indurated, while thickening and consolidation invaded the erectile tissue within. The man complained of lancinating pains in the penis and scrotum. Erections were painful, during which the organ gradually assumed a spiral twist, like a pig's tail or a vermiform appendix." This, of course, is the extreme picture.

True priaprism must be differentiated occasionally. This condition responds readily to aspirations of the corpora, following the technique of Dr. McKay. Recently such a case was seen in a boy thirteen years of age, who presented a marked degree of priaprism of one week's duration. There was a history of extreme masturbation. Aspiration of 15 cc. of dark blood brought prompt relief.

The treatment of fibrous cavernositis has been quite varied and of little value except for the use of radium plaques. Dr. McKay has outlined this form of therapy, which has been used recently and with moderate success. Excision of the indurated nodules has not been attempted because of many previously reported bad results. In the secondary cases local application of heat, particularly diathermy and short wave therapy, has made the patient more comfortable both physically and psychologically.

Dr. A. Hawes (Charlotte): Dr. McKay told you that one of the cases he reported was a case of mine. I saw that man last week. He has finished his series of treatments as carried out by Dr. Baxter, and the fibrosis has been definitely softened. The man states he is much better.

Peyronie's disease is something we do not see very often, but to the individual who has it, it is a very serious problem.

Two years ago I saw a bachelor surgeon from British Honduras who had a marked Peyronie's disease. He had seen quite a number of urologists in South America, and had been given no encouragement. He came to New York and demanded an operation. I assisted at that operation, and we did an extensive procedure— opened all the skin of the penis and removed all the indurated tissue. Within one month the scar on top of the penis had healed, but the plastic induration was just as thick as it was before the operation. I am sure that the operative procedure is of no benefit in this condition.

DIPHTHERIA IN NORTH CAROLINA

EMMETT LUPTON, M.D.

RALEIGH

In recent months there has been a great deal of discussion about the diphtheria situation in North Carolina. This has prompted me to study the facts rather than to accept any one's general opinion on this subject. In gathering the data presented here, the death certificates and morbidity reports here at the State Board of Health for the calendar year 1939 were analyzed.

In the last decade, Preventive Medicine has been playing an increasing role in our medical schools, and the leading physicians of the state have been stressing the importance of immunizations; but has the average doctor really exerted himself to enforce preventive measures? Certainly we need to become more "diphtheria conscious."

North Carolina has approximately 80,000 births annually. Last year, 1939, there were 2,368 cases of diphtheria reported. Our annual number of diphtheria cases amounts to 2.9 per cent of the babies born each year. The diphtheria death rate for North Carolina is exactly 16 times greater than the rate for the State of New York (table I). In 1939, cases of diphtheria were reported from 96 of our 100 counties. Deaths due to diphtheria occurred in 67 counties (table II). Diphtheria accounts for 5 per cent of the admissions to the Pediatric services of Duke Hospital. Only two states in the union, Arizona and New Mexico, have higher diphtheria death rates than North Carolina, and only one state, Texas, surpassed North Carolina in the total number of diphtheria deaths for 1938.

TABLE 1

Diphtheria Deaths and Death Rates For 1938 By States

	Deaths	*Rate*
Alabama	102	3.5
Arizona	32	7.8
Arkansas	99	4.8
California	96	1.6
Colorado	38	3.5
Connecticut	10	0.6
Delaware	2	0.8
District of Columbia	7	1.1
Florida	31	1.9
Georgia	117	3.8
Idaho	3	0.6
Illinois	119	1.5
Indiana	83	2.4
Iowa	22	0.9
Kansas	18	1.0
Kentucky	111	3.8
Louisiana	72	3.4
Maine	18	2.1
Maryland	17	1.0
Massachusetts	20	0.5
Michigan	43	0.9
Minnesota	13	0.5
Mississippi	83	4.1
Missouri	116	2.9
Montana	8	1.5
Nebraska	14	1.0
Nevada	2	2.0
New Hampshire	4	0.8
New Jersey	31	0.7
New Mexico	28	6.6
New York	37	0.3
North Carolina	168	4.8
North Dakota	7	1.0
Ohio	96	1.4
Oklahoma	117	4.6
Oregon	11	1.1
Pennsylvania	103	1.0
Rhode Island	1	0.1
South Carolina	64	3.4
South Dakota	9	1.3
Tennessee	112	3.9
Texas	241	3.9
Utah	5	1.0
Vermont	5	1.3
Virginia	122	4.5
Washington	10	0.6
West Virginia	67	3.6
Wisconsin	16	0.5
Wyoming	6	2.6

In 1939 there were 168 deaths in North Carolina due to diphtheria (table II). This is a needless sacrifice of human life. Of this number, 139 were white and 29 were negroes. There were 21 deaths among children under one year of age, 28 deaths at one year, 39 deaths at two years, 27 deaths at three years, 19 deaths at four years, 16 deaths at five years, and only 18 deaths among children over six years of age. This means that only 10.7 per cent of our diphtheria deaths occurred after the sixth year.

TABLE II

Diphtheria Cases and Deaths in North Carolina For 1939, By Counties

	Cases	*Deaths*
Alamance	69	2
Alexander	6	
Alleghany	3	2
Anson	19	
Ashe	4	1
Avery	1	1
Beaufort	31	2
Bertie	9	1
Bladen	13	1
Brunswick	12	
Buncombe	67	2
Burke	41	2
Cabarrus	49	6
Caldwell	30	2
Camden		
Carteret	26	3
Caswell	25	1
Catawba	40	1
Chatham	11	1
Cherokee	5	
Chowan	8	
Clay	3	1
Cleveland	39	
Columbus	33	2
Craven	22	2
Cumberland	35	1
Currituck		
Dare	3	
Davidson	60	2
Davie	5	2
Duplin	33	2
Durham	50	2
Edgecombe	38	4
Forsyth	47	4
Franklin	22	
Gaston	69	5
Gates	2	
Graham	1	
Granville	8	1
Greene	37	1
Guilford	97	9
Halifax	48	7
Harnett	26	1
Haywood	40	1
Henderson	2	2
Hertford	7	
Hoke	12	
Hyde		
Iredell	60	1
Jackson	3	
Johnston	51	2
Jones	5	
Lee	20	2
Lenoir	33	
Lincoln	28	
McDowell	12	
Macon	3	
Madison	25	3
Martin	29	3
Mecklenburg	52	6
Mitchell	22	3
Montgomery	2	
Moore	10	
Nash	66	5
New Hanover	27	1

	Cases	*Deaths*
Northampton	12	1
Onslow	10	
Orange	6	
Pamlico	7	2
Pasquotank	5	1
Pender	13	1
Perquimans		
Person	4	
Pitt	80	2
Polk	8	2
Randolph	39	2
Richmond	9	5
Robeson	14	1
Rockingham	52	4
Rowan	45	2
Rutherford	35	3
Sampson	18	
Scotland	2	
Stanly	12	
Stokes	7	
Surry	45	4
Swain	5	1
Transylvania	4	1
Tyrrell	6	
Union	20	1
Vance	19	2
Wake	101	12
Warren	19	
Washington	4	2
Watauga	7	2
Wayne	31	4
Wilkes	12	3
Wilson	25	4
Yadkin	21	1
Yancey	16	2
Total	2,368	168

Only 53 patients (31.5 per cent) lived in villages, towns and cities, and 115 deaths (68.5 per cent) occurred among individuals who lived in strictly rural areas. This bears out the contention that, for the most part, our diphtheria problem is a rural one.

I feel that too many physicians leave the job of immunization entirely to the Health Department. Preventive Medicine is a joint responsibility of all the physicians of the state. The Health Departments are doing a great deal of work toward preventing diphtheria, but unfortunately most of the diphtheria immunizations are given at preschool clinics. In 1939 the various county health departments of the state gave a total of 67,500 doses of diphtheria toxoid. At least 90 per cent of this was given to children just before they entered school. As has been pointed out above, only 10 per cent of diphtheria deaths occurred after the age of six.

This condition should not be interpreted to mean that the health departments are falling down on their jobs; for they are doing all they can in this matter. Most of the county health officers are now mailing out cards to parents when their children reach six months of age, urging them to have their babies immunized. A good time to advise parents about diphtheria and other immunizations is at the time of delivery or during one of the postpartum visits. It may help to remind them that there is a law in North Carolina requiring parents to have their children immunized against diphtheria.

If the practicing physicians in North Carolina will immunize as many infants and children as do the health departments, I think a marked drop will occur in our diphtheria death rate. Much of this responsibility lies with the general practitioners, and especially with those who practice in rural areas. Every physician should make it a personal duty to make the people in his community "diphtheria conscious".

Summary

1. Diphtheria is entirely too prevalent in North Carolina. Only two other states have a higher diphtheria rate than North Carolina, and only Texas has a larger number of diphtheria deaths.

2. Two thirds (68.5 per cent) of our diphtheria deaths come from rural areas, and one third (31.5 per cent) from villages, towns, and cities.

3. The county health departments are immunizing a large number of children each year. However, most of their immunizations are given to children of the preschool age, which is too late to do a great deal of good, since 90 per cent of the diphtheria deaths occur before the sixth year of age. The health departments are now making every possible effort to immunize infants during the first year of life.

4. The practicing physicians, especially those in rural areas, need to become more "diphtheria conscious," and should endeavor to make their communities "diphtheria minded"—especially in the matter of prevention.

Institutional care is always necessary at one time or another in treating tuberculosis, because of communicability. There is a considerable class which may be regarded as custodial cases, and there is need for domiciliary institutions where they can be cared for. When returned to the community results are often disastrous to them and their families. Aftercare and vocational rehabilitation are essential in restoring the patient to normal life. Masur, J., Hosp. Management, Oct., 1939.

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SEPTEMBER, 1940

APPENDICITIS

Against stupidity, we are told, the gods fight in vain. The same may well be said of complacency. In his excellent paper on appendicitis in this month's issue, Dr. Donnell Cobb does much to jolt us out of the complacency with which we accept every year an unnecessary number of deaths from appendicitis, amounting to half the fatalities of automobile accidents, and ten times the number of deaths from poliomyelitis. Dr. Cobb's paper sums up so admirably the facts in the case that little remains to be said; but the NORTH CAROLINA MEDICAL JOURNAL would like to offer a brief discussion by way of emphasizing his remarks.

The question is often asked by laymen, "What did people do before appendicitis was recognized?", with the inference that they did not die of it. This question is answered in a "Bill of Mortality" for the week August 15 to 22, 1665, published in London during the Great Plague. Although most of the deaths listed were from the plague, 79 were recorded from "Griping in the Guts". Anyone who has ever had appendicitis will recognize the accuracy of the description.

The responsibility for the outcome of an attack of appendicitis, as Dr. Cobb points out, lies chiefly with the first doctor who sees the patient; and this is far more often the family doctor or internist than the surgeon. Before any doctor is called, however, the patient or a member of his family must realize that something out of the ordinary is wrong, and *should* know the danger of laxatives. Here is a function and a responsibility of the public health officials. They are the logical members of the medical profession to carry on the education of the public in such matters. It is evident from Dr. Cobb's statistics that the people themselves are woefully ignorant of the danger that may be indicated by abdominal pain, especially when purgation is added. A strong counter-attack is needed upon the advertising of innumerable laxatives for innumerable symptoms. Individual doctors should, of course, lose no opportunity to warn patients of the insidiousness of appendicitis; but the public health men are the ones on whom the burden of informing the public falls most heavily.

The fact that North and South Carolina are among the three states in the union with the lowest mortality from appendicitis should not blind us to the fact that there is still room for great improvement. Indeed, a few years ago, the Metropolitan Life Insurance Company in one of its monthly bulletins naively explained this low mortality by opining that Carolina doctors were too ignorant to recognize appendicitis when they saw it. This journal prefers to accept Dr. Cobb's view and give credit to such pioneer surgeons as Drs. Hubert Royster and LeGrand Guerry; and in spite of the Metropolitan's low opinion of us, to believe that the professional acumen of our surgeons and medical men will compare favorably with the national average. No matter how competent the medical profession, however, there is little hope of materially lowering the appendicitis mortality until the public becomes aware of the possible significance of abdominal pain, and is alert to the danger of the two P's—procrastination and purgation.

THE WOMAN'S AUXILIARY

The North Carolina Medical Journal is happy to devote this month's issue largely to the transactions of the Woman's Auxiliary of the Medical Society of the State of North Carolina, at their eighteenth annual session held at Pinehurst May 13-15. The remarkable gain in membership of this organization during the comparatively short span of its existence bears witness to the need that existed for it long before it came into being. We hope that the male readers of this journal will be interested to see what their wives are doing with their time and with their dollars, and will speak a word of encouragement. Next May, when the society goes back to Pinehurst, it is to be hoped and expected that both the Medical Society and its Auxiliary will establish new attendance records.

* * * *

NORTH CAROLINA NOSTRUMS

In the *Journal of the A. M. A.* for August 3, an editorial, "Double Barreled Self Medication", gives two products of our state unflattering publicity. The new Food, Drug and Cosmetic Act may mean trouble for two North Carolina nostrums. "A release of the United States Department of Agriculture dated March 28, 1939, included the following sentence:

> 'Actions against drugs alleged to be dangerous and to violate the new law included 3 bottles of Cal-Co-Din, a pain-killer containing cinchopen; 488 packages of B. C. Headache Powders, 11,325 bottles of Bromo-Seltzer, and 3,256 packages of Stanback Headache Powders, all of which contained, among other ingredients, bromides and acetanilid.'

"It is noteworthy that the seizure of BC Headache Powders referred to above has resulted in a Notice of Judgment being issued on the basis that the powders 'would be dangerous to health when used in the dosage or with the frequency or duration prescribed, recommended or suggested in the labeling.' "

It will be recalled that in the March number of the North Carolina Medical Journal Dr. Donald McIntosh, in an excellent paper entitled "Chronic Acetanilid Poisoning With Addiction," discussed the increasing number of addicts to acetanilid, and stated that the two most commonly used headache powders in his territory were BC and Stanback. Dr. McIntosh stated that a recent analysis by a government chemist for the Food and Drug Administration showed each BC Powder "to contain approximately 4 grains of acetanilid, 6½ grains of salicylic acid and 12 grains of potassium bromide. The Stanback powder contained about 2 grains of acetanilid, 6 grains of acetyl salicylic acid, and 12 grains of potassium bromide."

The publication "Useful Drugs" gives as the dosage of acetanilid "0.2 Gm. (3 grains). It is well to begin with 0.1 Gm. (about 1½ grains), and to repeat cautiously." According to this, it will be seen that the BC Powders contain an excessive dose of acetanilid. In addition, both BC and Stanback powders are made still more depressing and habit-forming by the salicylate and bromide content. As Dr. McIntosh said, "Chronic acetanilid poisoning with addiction is found among all classes of people, but it is a major problem in the industrial and rural communities. It is very prevalent in the textile districts of the south . . . . It represents a challenge which we should meet at once.

"I can see only one proper solution to the problem. Dispensing of the drug should be limited to the medical profession, and the prescriptions should be non-refillable, as with the narcotics."

North Carolinians, along with other Americans, are horrified and filled with righteous indignation because the Japanese are making opium addicts of the Chinese; yet we complacently allow our own people to be made slaves to habit-forming patent medicines sold freely at drug stores, groceries and filling stations. The Japs at least can claim to be motivated by patriotism; those who exploit their own fellow citizens can claim no higher motive than greed for gain.

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AN APOLOGY

An editorial in the August issue of the North Carolina Medical Journal, welcoming the North Carolina branch of Powers and Anderson, referred to the Winchester Supply Company's stores in Charlotte and Greensboro, but failed to mention Wachtel's, Inc. This surgical supply company has been operating a store in Asheville and also advertises in this journal. The North Carolina Medical Journal wishes to apologize to the management of Wachtel's for the oversight, and to say that it was simply one of those stupid blunders that will happen occasionally, even in the best regulated of editorial families.

"HANAMALEA"

In the days of the old "star route" post offices, Riverton was the name given to a community of a dozen families clustered around the ancestral home in Scotland County. This community is unique in a number of ways. One of the most striking is the hold it retains on all who have gone out from it. Every year July and August are home-coming months for the children, grandchildren, and great-grandchildren of Riverton. Twice a day during the summer the pilgrims gather at the "swimming hole" to renew their youth in the waters of the Lumbee River.* Parked along its waterfront may be seen cars from Oklahoma, Illinois, Tennessee, Texas, South Carolina, Maryland, and Virginia, as well as from all parts of North Carolina.

A number of these summer visitors have built cottages for use during the summer season. Over the door of one cottage, built by a member of the fifth generation, is a board with the word "Hanamalea" painted on it. This, the owners explain, is a Hawaiian word meaning "The art of taking life easy". This word expresses so exactly the spirit of Riverton during vacation season that no one has questioned its origin.

With our physical and mental faculties so exhausted by the constant responsibility for human health and happiness and by the stress of world conditions, it is imperative for us physicians to learn the art of taking life easy. Man is so made that he can do an almost incredible amount of work, if he will sandwich intervals of complete relaxation between periods of work. Indeed, it is in periods of peaceful reflection that some of the greatest discoveries have been conceived and brought to final perfection. At a medical gathering some time ago, a comment was made on the amount of original work done by a certain medical teacher. Another doctor agreed, and added, "The reason is that he has had tuberculosis and has to rest two hours every day. While the rest of us are running our tongues out, he is lying there thinking." It will be recalled that Charles Darwin was a "constitutional inadequate", and could actually work only two hours a day. The rest of the time was spent in lying down. This rest period gave him time to digest and organize the observations made during his working time. The result of his "taking life easy" was that the science of biology was completely revolutionized.

None of us, of course, would think of working only two hours a day, and few of us think we can rest two hours; but virtually all of us could find more time for the art of taking life easy if we would budget our time. All of us can afford to take at least two weeks of solid vacation every year, with shorter periods scattered throughout; indeed, none of us can afford not to do so. Furthermore, we can cultivate the habit of leaving our worries behind us when we leave our offices or the sickbeds of our patients, and of relaxing at every opportunity. We preach to our patients the virtue of relaxation; we owe it to our families to practice what we preach.

Now that the vacation season for most of us is over, we should begin the year's work with the resolve that we will learn to practice Hanamalea—the art of taking life easy.

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A PERMANENT BINDING FOR THE NORTH CAROLINA MEDICAL JOURNAL

Since last month's issue of the North Carolina Medical Journal was devoted to the Transactions of the Medical Society, and this month's issue contains the doings of our sister organization, the Woman's Auxiliary, it is pertinent to remind subscribers that Mr. Harry Aitchison has made arrangements to have Volume I bound at the end of the year in an attractive cloth covering with gilt lettering for only $2.00. This is virtually at cost, but Mr. Aitchison, along with the rest of the Penry-Aitchison Company, has taken such an interest in the Journal that he is anxious to have most of the copies published this year permanently bound. In the December issue an index for the whole year may be expected, which will be convenient as a means of reference to the bound volume. It is to be hoped that most of our subscribers have saved their copies thus far, in anticipation of having them bound.

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*This name, derived from an Indian word meaning "crooked", because of the river's winding course, has been perverted into "Lumber River". An even worse desecration is "Drowning Creek". The late John Charles McNeill endured one term in the state legislature, largely to have a bill passed making Lumbee River the legal name of this stream.

CASE REPORTS

North Carolina Baptist Hospital

Robert L. McMillan, M.D.

Winston-Salem

Mr. R. W., a twenty-nine year old white single male, was examined first on February 8, 1940, because of weakness of the left arm and leg of about fourteen hours' duration, and headache of three or four hours' duration. The patient became ill February 8 after supper, with numbness and weakness of the left arm and leg. His face felt "stiff" on the left. After several hours a terrific headache followed, accompanied by nausea and vomiting. Within one day he began to be rather drowsy and was soon unable to use the left arm and leg. He was admitted to the North Carolina Baptist Hospital on February 9.

Past History: The patient gave conflicting reports, but it was ascertained that he had had a colostomy, likely for obstructing tuberculosis of the rectum, in 1936. He had had a heart murmur for some time—probably ten years. At the time of the colostomy his weight was 98 pounds. He gained weight up to 200 pounds, but in 1939-40 gradually lost, until he weighed about 120 pounds at the time of his present illness. During this year he had not felt well, and complained of poor appetite, joint pains and loss of weight.

Family History: There was no tuberculosis in the family. Both the mother and the father had aortic regurgitation. The father had had congestive heart failure ten months previously; he also had rheumatoid arthritis, and his blood pressure was 210 systolic and 30 diastolic. The mother's blood pressure was 170 systolic and 80 diastolic. Blood Wassermanns of all were negative.

Physical Examination: The temperature was 100.2° on admission; pulse 90; respirations 22; blood pressure 120 systolic, 30 diastolic. The patient was emaciated, apprehensive, and stuporous, his speech thick and slow. The right pupil was larger than the left, and both reacted sluggishly to light and accommodation. The lungs were clear except for a few moist rales at both bases. The heart was remarkably enlarged to the left, being 13 cm. in the sixth intercostal space, where the apex impulse was felt. There was a harsh systolic and a presystolic murmur at the apex with accentuation of the first sound. There was also the classic diastolic murmur of aortic regurgitation transmitted down the left sternal border. Corrigan and capillary pulses were present, along with visible pulsation of the retinal arteries. The edge of the spleen was barely felt.

Neurological examination showed flaccidity of the left arm and leg, with positive Babinski signs and ankle clonus on this side. Hoffman's sign was present on the left.

Accessory Clinical Data: A blood count showed erythrocytes 4,000,000 with a hemoglobin of 75 per cent, or 11.6 Gm. (Sahli); leukocytes 10,500, polynuclears 85 per cent, lymphocytes 15 per cent. Blood culture showed numerous colonies of streptococcus viridans. The urine was not remarkable.

Spinal puncture revealed grossly bloody fluid under a pressure of 350 mm. of spinal fluid. Serologic tests for syphilis were negative on both the blood and spinal fluid.

Impression

1. Rupture of right lenticulostriate artery with hemiplegia due to: (a) mycotic aneurysm, (b) rupture of congenital miliary aneurysm.
2. Aortic regurgitation and mitral stenosis on the basis of rhemuatic fever.
3. Subacute bacterial endocarditis due to streptococcus viridans.

Hospital Course

The patient went progressively downhill, with a marked increase in the temperature and respiratory rate. There was evidence of terminal pneumonia, and possibly some dilatation of the heart, as shown by an increase in the cardiac dullness. The heart sounds remained good until the time of death. The patient lapsed deeper into coma and expired on February 19.

Autopsy Report

Dr. J. C. Reece

The body was that of a well developed and emaciated adult male. External examination revealed a colostomy opening in the left lower quadrant. No other abnormalities were observed.

At autopsy the brain weighed 2150 grams.

This case was presented at the regular staff meeting of the N. C. Baptist Hospital, March 18, 1940.

There was a definite area of softening over the right parietal and frontal areas, and a marked congestion of the meningeal vessels. On section a large hemorrhagic area involving the parietal and frontal lobes was found just lateral to the ventricle, but not communicating with it. This area was filled with an unorganized blood clot and degenerated brain tissue. Microscopic sections showed necrosis of the brain substance extending from the periphery of the hemorrhagic area to the cortex.

The liver weighed 2170 grams. The lower border extended 7 cm. below the costal margin. Sections showed chronic passive congestion. The spleen was enlarged, weighing 510 grams. An elevated plaque was found on the anterior lateral surface, and on section this was found to be continuous with a grayish white infarct. Sections from this showed complete necrosis of the substance of the spleen. A small accessory spleen was found attached by a separate pedicle at the lower pole. No other gross lesions were observed within the peritoneal cavity. The colostomy opening was patent, and also the sigmoid colon and rectum below the colostomy.

The kidneys weighed a total of 460 grams. Many petechial hemorrhages were observed beneath the capsule, and a large grayish white infarct measuring about 1.5 cm. in diameter was found in the left kidney. Sections showed necrosis of the kidney substance and many smaller petechial hemorrhages throughout the body of the kidney.

The heart weighed 540 grams. There was some hypertrophy of the chordae tendineae of the right ventricle. The leaflets of the pulmonic and tricuspid valves appeared competent. The myocardium of the left ventricle was greatly thickened. The mitral valve was covered by many friable and fungating nodules that extended across the endocardium to the aortic ring and the base of the aortic valve. The chordae tendineae and leaflets of the mitral valve were greatly thickened, and there was a thickening and induration of the aortic valve leaflets. Sections from the fungating nodules showed them to be composed of inflammatory cells and bacteria.

Diagnosis:

1. Sub-acute bacterial endocarditis (Streptococcus viridans).
2. Rheumatic heart disease.
   a. Aortic insufficiency and stenosis.
   b. Mitral stenosis.
3. Cerebral embolus, with infarction and hemorrhage.
4. Renal infarct.
5. Acute splenic tumor and infarct.

Discussion

A very interesting aspect of this case is the fact that the patient and his mother and father were afflicted with frank aortic regurgitation, with no evidence whatever of syphilis. Cerebral hemorrhages in patients of this age most often result from some generalized disease process rather than from arteriosclerosis and hypertension as is common in older individuals. I have seen a similar paralysis in a twelve year old negro boy who was found to have advanced lymphatic leukemia, and who at post mortem showed a rupture of the lenticulostriate artery.

CLINICO-PATHOLOGICAL CONFERENCE

City Memorial Hospital

Winston-Salem

Mrs. J. C. N. was admitted to the North Carolina Baptist Hospital on October 27, 1939, complaining of difficulty in speaking and swallowing. She had been perfectly well until the onset of the present illness. Shortly after the onset of the above symptoms she noticed some unsteadiness in both arms and some weakness in the right arm and leg. She was able to walk, but stated that she walked with some difficulty, due to the weakness.

Examination revealed a young white woman, lying quietly in bed. She spoke with some difficulty, and her speech was definitely slurred and indistinct. There was marked weakness of the entire right side of the face, affecting all muscles in the facial group. There were no changes in the eyegrounds. There was a marked horizontal nystagmus of both eyes. The tongue deviated away from the affected side of the face, and there was a partial paralysis of the soft palate on the affected side. There was a marked intention tremor of both hands. The abdominal reflexes were absent. The heel to knee tests were performed fairly well, except for the presence of a moderate degree of intention tremor. The knee jerks were slightly hyperactive, bilaterally. There was an inconstant Babinski reaction on the right.

Skull x-rays made on October 30 revealed "a small area of increased density approximately 2 cm. in diameter on the level with the auditory meatus, suggesting probably neoplasm."

Because of the clinical signs, which suggested either an acute multiple sclerosis or a tumor of the cerebellum, it was deemed not advisable to perform a lumbar puncture; so this procedure was deferred.

The laboratory examinations of the blood and urine revealed normal findings. The red cell count was 4.6 millions; the white cell count, 10.5 thousand, with 85 per cent polymorphonuclears and 15 per cent lymphocytes.

The condition of the patient showed little change while she remained in the Baptist Hospital. Because of the evidences of an intracranial neoplasm, her husband was advised that it would be necessary for her to be examined by a neuro-surgeon, with the end in view of a diagnostic ventriculogram. Accordingly, she was removed to a hospital in a neighboring city on November 2 for further study. She was sent back to her home after a few days with a final diagnosis of multiple sclerosis, air injection studies not having been made.

For a number of months after this there was no obvious change in the condition of the patient. For a while there was a degree of improvement, eventually bringing her to the point of being able to walk short distances. This improvement was not sustained, however, and she shortly became bedridden. On April 11, 1940, she was admitted to the City Memorial Hospital complaining of nausea and vomiting and dimness of vision for near-by objects. Laboratory examinations were essentially negative at this time, and an examination of the eyegrounds revealed no evidences of increased intracranial pressure. After intravenous glucose solutions were given for two days, the nausea disappeared and the patient left the hospital improved.

She was readmitted on May 26, 1940, and the interval note on her chart states that she had become able to walk with the aid of two people. On the second admission she had a marked slurring of speech. She was extremely weak and not able to take food by mouth. Physical examination revealed almost total paralysis, incoordination of the eye movements and a slow rhythmic nystagmus. The tongue was swollen. The pupils were equal and reacted sluggishly to light. There were rhonchi throughout the chest, but no dullness. Reflexes were diminished, and a bilateral Babinski was present. The blood pressure was 110/75. The temperature was 100.4 and the pulse 116 on admission. The laboratory work revealed 4,425,000 red cells, 11 grams of hemoglobin, 11,400 white cells, 73 segmented polynuclears, 10 stabs, 15 lymphocytes, 2 monocytes. The urine taken after intravenous glucose showed an acid reaction, a specific gravity of 1.030, a trace of albumin, a 4 plus reaction for sugar and acetone, and 25-30 white blood cells per high power field. A second specimen of urine revealed a trace of albumin and no sugar. During the last two days of the patient's life her temperature and pulse went steadily up. Just before death, the rectal temperature was 107, the pulse more than 170, and the respirations 50. She had no control over her sphincters while in the hospital. She died on the fourth hospital day.

Clinical Discussion

Dr. E. A. MacMillan

This patient suffered a rather sudden onset of symptoms pointing to a lesion in or adjacent to the cerebellum. The abrupt beginning, the slurring speech, the intention tremor, the paralysis, the absent abdominal reflexes and the nystagmus brought at once to mind the possibility of the acute form of multiple sclerosis. There were no eyeground changes and no headache. On the other hand, there was considered strongly the possibility of a tumor of the cerebellum. The x-ray evidence of an intracranial lesion, together with the other evidences of a lesion in the posterior fossa, led us to the decision that it would be unwise to perform a lumbar puncture. It was decided to refer the patient to another hospital where the services of a neuro-surgeon were available. The diagnosis of multiple sclerosis was made at this hospital, and it was not considered necessary to make air-injection studies. The long period in which there was little change in the condition of the patient made the diagnosis of a degenerative lesion seem plausible. The patient's terminal illness, in which there developed symptoms of increased intracranial pressure, reopened the possibility of a space-taking lesion. However, examinations of the eyegrounds never revealed evidence of pressure.

Clinical diagnosis:

Multiple sclerosis
Cerebellar tumor(?)
Terminal bronchopneumonia

Pathological Discussion

Dr. T. T. Frost

The autopsy on this patient was limited to examination of the brain and spinal cord. The brain was found to be markedly congested and swollen. The gyri were flat and the sulci were extremely shallow. The subarachnoid vessels were all distended with blood. The right lobe of the cerebellum was much larger than the left lobe, and the midline of the cerebellum was deviated to the left. On section a poorly defined white tumor mass was found located between the dentate nucleus and the folia of the cerebellar cortex, occupying the entire white matter of the right cerebellar hemisphere and extending slightly across the midline and into the pons. The normal markings of the pons were obliterated. Multiple coronal sections of the cerebral hemispheres revealed hyperemia of the gray matter and marked congestion of all the vessels. No areas of scarring were visible at any point.

Multiple sections of the spinal cord did not reveal anything unusual except marked hyperemia.

Microscopically, sections from the tumor in the right lobe of the cerebellum show that it is composed of a network of interlacing glial fibers and is rather sparsely populated with cells. The most striking of these cells are quite large, with eccentric nuclei, and occasionally some of them have more than one nucleus. These cells give rise to numerous processes which extend in all directions from the cell bodies. In the white matter the arrangement of the neoplasm is such as to give a rather spongy, loosely knit appearance, while in the region of the pons the cells are much smaller and much closer together. This tumor is an astrocytoma, according to the classification of Cushing and Bailey.

Returning again to the gross picture it can be seen without any difficulty that the fourth ventricle is very definitely displaced to the left; and while the ventricle is small, due to the edema of the brain, a ventriculogram would certainly have shown this displacement. It is greatly to be regretted that this procedure was not carried out as requested when the case was referred to another hospital.

The diagnosis appears reasonably certain, but the ventriculogram showing the deviation of the fourth ventricle would have made the diagnosis much more definite. It is probable, though not certain, that the tumor was inoperable at the time the patient first consulted a physician. The astrocytoma is in general the brain tumor for which most can be done. It is slow growing, and the operative results where the tumor is operable are generally good. According to Cushing's figures on brain tumors the astrocytoma has the longest survival period—seventy-eight months. It is also the most common tumor, forming 38 per cent of those that he describes.

Highly Active Vitamin K Substance Offered by Squibb in Thyloquinone

Thyloquinone, 2-methyl-1, 4-naphthoquinone, a synthetic preparation of unsurpassed vitamin K activity, has been placed upon the market by E. R. Squibb & Sons, New York. Dissolved in corn oil, Thyloquinone is supplied in two forms for oral administration—as Solution and in small capsules (Microcaps).

Ansbacher and Fernholz of the Squibb Institute for Medical Research were the first to demonstrate the high biologic activity of 2-methyl-1, 4-naphthoquinone. Later reports from many different laboratories have confirmed their findings. The substance, for which the Squibb name is Thyloquinone, is more potent, more rapid in action and more economical than naturally occurring vitamin K_1 or K_2 or any concentrate of these vitamins.

The clinical indications for Thyloquinone are the same for vitamin K concentrate. The chief uses, which have had repeated confirmation, are:

1. To cure or prevent hemorrhage in obstructive jaundice, biliary fistula and liver insufficiency.
2. To prevent or treat hemorrhage in the newborn by administration to the expectant mother or to the infant immediately after birth. These will probably prove to be the most important indications for the use of Thyloquinone, since intracranial hemorrhage, which is one of the major causes of death among the newborn, seems undoubtedly to be the direct result of prolonged prothrombin clotting time.

In addition to the confirmed uses, Thyloquinone is indicated for the oral treatment of hemorrhage associated with subnormal blood prothrombin content due to vitamin K deficiency.

Thyloquinone in Oil is supplied in 5 cc., 10 cc., and 50 cc., vials, each 1 cc. of corn oil containing 1 mg. Thyloquinone. Thyloquinone in Oil in Microcaps, representing 1 mg. Thyloquinone in corn oil, individually sanitaped, is marketed in boxes of 20, 50 and 100. ("Microcaps" is the Squibb trademarked name for miniature precision-filled gelatin capsules.)

BULLETIN BOARD

PRESIDENT'S MESSAGE

The Problem of Aviation Medicine

In the vast expansion contemplated in military and naval aviation in our armed forces, the problem of choosing men fit for this service falls into the hands of the medical profession, whether they want it or not, and whether or not they are prepared for it.

We desire a force of 25,000 pilots for our aviation program. The present plan is to train 7,000 pilots each year. We have 5,000 trained pilots now. Of the 173,000 men of available ages and with college training, one-third will eliminate themselves for various reasons. This leaves about 116,000 men. About one-third of this group will measure up to the severe physical requirements. This leaves a group of about 38,000 men. Only about 21,000 could complete the necessary training courses if all of the group undertook them. The 1940 graduating class of West Point were unable to fill their aviation quota.

Not only are lives to be guarded, but the destruction of property and expensive airplanes is to be prevented. A recent article in the *Annals of Internal Medicine* shows that in the last World War out of every 100 aviators killed, only two were killed in action by the enemy; eight died due to defective equipment, and the rest perished due to inherent defects in themselves. The wards of military hospitals were occupied by aviators who were sick, yet who had no discernable or diagnosable disease. Fighting planes were thus grounded because aviators were on the hospital list.

Aviation medicine has the problem of picking those mentally and psychologically fit as well as physically fit for this service. Physically, the strain of high speeds, high altitudes and terrific dives often causes petechial hemorrhages in the brain, dilated hearts and anoxemia. Psychologically, for the man who is not a fighter and has not the killer instinct or even the defensive instinct, a neurosis is an almost certain prospect.

Aviation medicine will call for rare judgment, delicate instrumental as well as physical diagnosis, a certain and sure knowledge of psychology, and lastly the ability to coordinate one's findings and to say confidently that a man has the physical stamina and the mental ability to become a fighting pilot or an aviator in a combat ship. Our problem is how we can best prepare ourselves for this service to our country.

Hubert B. Haywood, M.D.

News Notes from the University of North Carolina

Dr. L. W. Hackett, Assistant Director, International Health Division of the Rockefeller Foundation, visited the School of Public Health of the University of North Carolina during August. Dr. Hackett has just returned from Brazil, and is making a survey of institutions where public health research and instruction are in progress.

Dr. H. E. Meleney, Director of postgraduate public health education at Vanderbilt Medical School, spent several days in Chapel Hill during August. Dr. Meleney is also making a survey of institutions where research and instruction in public health are in progress.

Dr. G. F. Otto, Assistant Dean of the School of Hygiene and Public Health of The Johns Hopkins University, Baltimore, has been a visitor at the School of Public Health this summer, where he has been cooperating with Dr. H. W. Brown, Professor of Public Health, in research studies on malaria and hookworm.

Buncombe County Medical Society

Members of the Buncombe County Medical Society were guests of the Black Mountain, Swannanoa and Montreat physicians at a picnic on August 2 at the 4H Club. On August 19 the society held the first dinner meeting of the year at the George Vanderbilt Hotel. Dr. V. P. Sydenstricker, Professor of Medicine at the University of Georgia, spoke on "Pellagra".

About $40.00 has been collected from members of the society for the National Physicians Committee fund.

Mecklenburg County Medical Society

The August issue of The Bulletin of the Mecklenburg County Medical Society was designated as the "Presbyterian Hospital Number", and was devoted largely to the new Presbyterian Hospital at Charlotte, which has just been completed.

Two parties were given for the Mecklenburg County Medical Society in July. Dr. R. T. Ferguson entertained the members at a fish fry, and Dr. L. C. Todd entertained at a buffet supper.

NEWS NOTES FROM THE STATE BOARD OF HEALTH

From January through July, this year, the State Board of Health's Vital Statistics Division registered 46,156 births. This number is 1,298 greater than the 44,858 registered during the corresponding period in 1939. So far this year—that is, through July—there have been 19,520 deaths recorded, or 658 more than the 18,862 for the corresponding period last year.

It must be borne in mind, as was recently pointed out by the State Health Officer, that figures taken over a short period of time mean little in the way of long-range determinations, but sometimes they do indicate trends, encouraging or discouraging, as the case may be.

Through July, this year, there were 2,732 deaths recorded in North Carolina among infants under a year old, while the number the first seven months of last year was 2,783—a slight difference. Maternal deaths through July totaled 276, as compared with 244 last year.

Deaths of children under two years of age this year from diarrhea and enteritis totaled only 190 through July, as compared with 383 for the same period of 1939.

Deaths from preventable accidents so far this year have outnumbered the 1939 total for the same period by 16. Through July, 1940, 780 North Carolinians were the victims of accidents designated as preventable, as compared with 764 last year.

Already this year in North Carolina there have been nine air transportation deaths, divided as follows: two in July, one in June, two in March, three in February, and one in January. Through the same period last year there were only two, and only seven for the entire year. Air fatalities in North Carolina for the entire year of 1938 totaled nine, for 1937, seven, and for 1936, eight.

So far this year there have been more homicides and suicides than occurred during the first seven months of 1939. The 1940 homicide total through July was 208, compared with 192 a year ago, while 175 North Carolinians have died at their own hands since January 1, an increase of 18 over the 1939 figures through July.

The greatest number of suicides to occur during any month in either year, so far, was 44 in May, 1940. Of course, there can be no reason assigned to this, any more than it can be figured out why people continue to take the lives of each other.

Typhoid fever continues to take a slight toll, there having been 13 deaths from that disease so far this year, as compared with 20 through July, 1939. Inoculation and sanitation have caused the typhoid death rate in North Carolina to fall from 35.8 in 1914 to 1.3 in 1939—a drop of 34½ points.

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In connection with the 350th anniversary of the birth of Virginia Dare on Roanoke Island, August 18, 1937, the State Board of Health presented the President of the United States with a copy of the birth certificate of the first child of English parents born in the new world. That story made the front page both here and elsewhere. Later, a framed copy of the certificate was sent to the British government, to be placed in the archives in London, and it was acknowledged with great formality, through diplomatic channels.

The Health Bulletin has been edited for more than seventeen years by Dr. George M. Cooper, assistant State Health Officer and Director of the Division of Preventive Medicine in the State Board of Health. It is mailed to a list of 60,000, in all parts of the world, including—at the last actual count—families served by 1,453 of North Carolina's 1,500 post-offices.

NEWS NOTES FROM THE NORTH CAROLINA TUBERCULOSIS ASSOCIATION

The number of deaths from tuberculosis continued its downward trend in 1939, according to statistics announced by Dr. Paul P. McCain, president of the National Tuberculosis Association. From a death rate of 48.9 per 100,000 population in 1938, the death rate dropped to 46.6 last year, a decrease of 4.7 per cent.

In 1938 there were 63,677 deaths. The 1939 figure is 61,184. "While we may point with pride to the number of persons saved, we are still challenged by figures which indicate that tuberculosis is a widely prevalent disease," Dr. McCain said. "The figures for 1939 are both encouraging and challenging. We should be deeply concerned, however, over the 61,184 deaths because we know so much concerning the necessary means for controlling the disease."

Dr. McCain urges a concentration of effort in health education, the provision of more beds for tuberculous patients, the isolation of persons with the contagious disease and an intensive program for finding tuberculosis among certain groups.

In North Carolina the death rate decreased from 52.7 in 1938 to 51.0 in 1939 for each 100,000, a decrease of 3.2 per cent.

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A colored tuberculosis twelve-bed waiting station was constructed and equipped in Granville County during the past year. The institution, which is for the purpose of isolating colored tuberculous patients during the interval from the time of diagnosis until the patients can be admitted to a state sanatorium, is sponsored by the Christmas Seal Sale Committee and the civic clubs, with a small donation from the local chapter of the National Red Cross.

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Mrs. Florence Breed, National Field Advisor, spent the week of July 23-27 at the office of the State Tuberculosis Association in conference with Mr. Frank Webster, the managing director, and Mr. Walter Page, Jr. Mrs. Breed visited the North Carolina Sanatorium and the Forsyth County Sanatorium during her stay.

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The Southern Tuberculosis Conference meets in Monroe, La., October 21, 22, and 23.

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An Institute for negro tuberculosis workers will be held in New Orleans October 14 to 19.

NORTH CAROLINA PEDIATRIC SOCIETY

The North Carolina Pediatric Society held its annual summer meeting at Roaring Gap Labor Day week-end. Dr. Jean Cook, of St. Louis, Mo., was guest speaker.

ANNOUNCEMENT

There is a need for a competent general practitioner in a county near Franklin, N. C. Anyone who knows someone suitable for this place should write Dr. Edgar Angel, Franklin,

Piedmont Post Graduate Clinical Assembly

The Sixth Piedmont Post Graduate Clinical Assembly will be held at the Nurses' Home of the Anderson County Hospital in Anderson, S. C., on September 17, 18, 19. The following program has been planned:

TUESDAY, SEPTEMBER 17, 2:30 P. M.

Call to order by Dr. E. A. Hines, President of the Assembly, Seneca, S. C.

Welcome address—Dr. Frank Wrenn, President Anderson County Hospital.

Welcome address—Dr. Herbert Blake, President Anderson County Medical Society.

SCIENTIFIC SESSION

Dr. J. M. Feder, Pathologist Anderson County Hospital, presiding.

Section of Pathology and Pharmacology

Technical and Chemical Importance of the Erythrocyte Sedimentation Rates
Dr. Jack C. Norris, Atlanta, Georgia.

Recent Work in the Field of Vitamin Therapy
Dr. A. Black. Research Division Squibb Laboratories, New Brunswick, New Jersey.

The Melanomas
Dr. Everett L. Bishop, Associate Professor Pathology, Emory University, Atlanta, Georgia.

Bone Pathology
Lieut. Col. J. E. Ash, Medical Corps U. S. Army, Curator Army Medical Museum, Washington, D. C.

John C. Calhoun Hotel, 7:00 P. M.

Dutch supper with round table discussions on the afternoon program.

ADDRESS:

Military Preparedness and the Physician
Dr. W. L. Pressly, President South Carolina Medical Association, Due West, S. C.

WEDNESDAY, SEPT. 18, 2:30 P. M.

Dr. Jack Parker, Vice-President Piedmont Post Graduate Clinical Assembly, Greenville, S. C., presiding.

X-ray in the Treatment of Infections
Dr. James J. Clark, Associate Professor of Roentgenology, Emory University, Atlanta, Georgia.

Sex Endocrine Therapy and Pelvic Surgery
Dr. R. A. Ross, Associate Professor of Obstetrics and Gynecology, Duke University, Durham, N. C.

John C. Calhoun Hotel, 7:30 P. M.

Annual banquet and addresses by distinguished guests.

THURSDAY, SEPT. 19, 2:30 P. M.

Dr. J. R. Young, Chairman of the South Carolina Division of the Southeastern Surgical Congress, Anderson, S. C., presiding.

ADDRESS:

A Pot-Pourri of Surgical Impressions
Dr. Le Grand Guerry, Columbia, S. C.

Fracture Symposium
Introductory remarks by Dr. Wm. A. Boyd, Chairman, Columbia, S. C.

A. **General Principles in the Treatment of Fractures**
Dr. Warren White, Greenville, S. C.

B. **Fractures of the Metacarpal Bones and of the Phalanges**
Dr. C. O. Bates, Greenville, S. C.

C. **Fractures of Both Bones of the Forearm**
Dr. C. J. Scurry, Greenwood, S. C.

D. **Fractures of the Humerus**
Dr. L. A. Coleman, Spartanburg, S. C.

E. **Fractures of the Ankle**
Dr. F. A. Hoshall, Charleston, S. C.

F. **Fractures of the Condyles of the Tibia (Bumper Fractures)**
Dr. A. T. Moore, Columbia, S. C.

G. **Compression Fractures of the Spine**
Dr. E. T. Kelley, Kingstree, S. C.

News Notes

Dr. Wallace Bradford addressed the Anderson County (S. C.) Medical Society on the subject of "Female Sterility" in July. Dr. Paul H. Ringer spoke before the Second District Medical Society at Columbia, S. C., July 31, on "Tuberculosis".

* * * *

A paper on "The Prevention of Infection by Air-Borne Bacteria of Operative Wounds", by Dr. Deryl Hart and Dr. Randolph Jones, Jr., which was read before the First District Medical Society at Savannah, Georgia, July 19, was published in the August issue of **The Journal of the Medical Association of Georgia.**

* * * *

Dr. Margery Lord has been appointed Health Officer of the City of Asheville.

* * * *

Dr. O. D. Baxter has been elected a member of the American College of Radiology. Dr. T. W. Baker has been certified by the American Board of Internal Medicine; Dr. R. A. Moore has been certified by the American Board of Pediatrics; and Dr. J. W. Gibbon has been made a member of the Founders Group of the American Board of Surgery.

* * * *

Dr. C. H. Mauzy, of Winston-Salem, has been certified by the American Board of Gynecology and Obstetrics.

* * * *

Dr. Eugene Carr will open offices in Asheville soon for the practice of gastro-enterology.

* * * *

Dr. Bill Johnson has opened offices in Charlotte for the practice of internal medicine.

The value of Pyrethrum in Scabies is well established through the clinical work of Dr. S. E. Sweitzer, (Scabies, further observations on its treatment with Pyrethrum Ointment, Journal-Lancet, Sept. 1936, Vol. LVI, No. 9, p. 467.) who used it on 1213 cases at the Minneapolis General Hospital. See advertisement, page XI.

TRANSACTIONS OF THE

WOMAN'S AUXILIARY

of the Medical Society of the State of North Carolina

EIGHTEENTH ANNUAL SESSION

Held at Pinehurst, North Carolina, May 13-15, 1940

OFFICERS 1939-1940

President .... Mrs. C. F. Strosnider, Goldsboro
President-Elect .... Mrs. C. R. Hedrick, Lenoir
First Vice President and Chairman of Organization
Mrs. Joseph A. Elliott, Charlotte
Second Vice President and Chairman of Bed
Mrs. Alfred A. Kent, Jr., Granite Falls
Third Vice President and Chairman of Loan Fund
Mrs. R. A. Moore, Winston-Salem
Chairman of Past Presidents
Mrs. P. P. McCain, Sanatorium
Corresponding Secretary
Mrs. Jack Harrell, Goldsboro
Recording Secretary
Mrs. J. D. Freeman, Wilmington
Treasurer .... Mrs. E. C. Judd, Raleigh

ADVISORY BOARD, 1939-1940

Dr. Hubert Haywood .... Raleigh
Dr. S. D. Craig .... Winston-Salem
Dr. W. H. Cobb .... Goldsboro

COUNCILLORS, 1939-1940

First District .... Mrs. H. D. Walker, Elizabeth City
Second District .... Mrs. Graham Ramsey, Washington
Third District .... Mrs. J. S. Brewer, Roseboro
Fourth District .... Mrs. M. A. Pittman, Wilson
Fifth District .... Mrs. W. T. Rainey, Fayetteville
Sixth District .... Mrs. Ben Lawrence, Raleigh
Seventh District .... Mrs. Harry Winkler, Charlotte
Eighth District .... Mrs. Wm. P. Knight, Greensboro
Ninth District .... Mrs. James W. Vernon, Morganton
Tenth District .... Mrs. W. C. Johnson, Canton

CHAIRMEN OF STANDING COMMITTEES, 1939-1940

Program .... Mrs. Frederick R. Taylor, High Point
Research .... Mrs. R. S. McGeachy, New Bern
Memorial .... Mrs. Isaac H. Manning, Chapel Hill
Hygeia .... Mrs. K. B. Pace, Greenville
Press and Publicity .... Mrs. Sidney Smith, Raleigh
Public Relations
Mrs. James Buren Sidbury, Wilmington
Scrap Book .... Mrs. C. E. Howard, Goldsboro
Historian .... Mrs. G. Erick Bell, Wilson
Exhibits .... Mrs. C. D. Thomas, Sanatorium
Legislature .... Mrs. Hamilton W. McKay, Charlotte
Jane Todd Crawford Memorial
Mrs. Thomas Leslie Lee, Kinston

OFFICERS 1940-1041

President .... Mrs. Clyde R. Hedrick, Lenoir
President-Elect .... Mrs. Sidney Smith, Raleigh
First Vice President and Chairman of Organization
Mrs. C. F. Strosnider, Goldsboro
Second Vice President and Chairman of Bed
Mrs. F. M. Houser, Cherryville
Third Vice President and Chairman of Loan Fund
Mrs. J. S. Hooker, Chapel Hill
Chairman of Past Presidents
Mrs. P. P. McCain, Sanatorium
Corresponding Secretary .... Mrs. W. G. Byerly, Lenoir
Recording Secretary
Mrs. J. D. Freeman, Wilmington
Treasurer .... Mrs. E. C. Judd, Raleigh

ADVISORY BOARD, 1940-1941

Dr. Caroline McNairy .... Lenoir
Dr. C. F. Strosnider .... Goldsboro
Dr. J. W. Huston .... Asheville

COUNCILLORS, 1940-1941

First District .... Mrs. H. D. Walker, Elizabeth City
Second District .... Mrs. John Winstead, Greenville
Third District .... Mrs. J. S. Brewer, Roseboro
Fourth District .... Mrs. M. A. Pittman, Wilson
Fifth District .... Mrs. W. T. Rainey, Fayetteville
Sixth District .... Mrs. Ben Lawrence, Raleigh
Seventh District .... Mrs. Harry Winkler, Charlotte
Eighth District .... Mrs. Wm. P. Knight, Greensboro
Ninth District .... Mrs. James W. Vernon, Morganton
Tenth District .... Mrs. S. M. Bittinger, Black Mountain

CHAIRMEN OF STANDING COMMITTEES, 1940-1941

Program .... Mrs. Leslie Lee, Kinston
Research .... Mrs. R. S. McGeachy, New Bern
Memorial .... Mrs. Isaac H. Manning, Chapel Hill
Hygeia .... Mrs. K. B. Pace, Greenville
Press and Publicity
Mrs. Alfred Kent, Jr., Granite Falls
Public Relations
Mrs. W. M. Johnson, Winston-Salem
Scrap Book .... Mrs. J. R. Terry, Lexington
Historian .... Mrs. Paul Yoder, Winston-Salem
Exhibits .... Mrs. C. D. Thomas, Sanatorium
Legislature .... Mrs. Joseph A. Elliott, Charlotte
Jane Todd Crawford Memorial
Mrs. Frederick R. Taylor, High Point

PAST PRESIDENTS

1923 (Organizing Chairman)
Mrs. P. P. McCain, Sanatorium
1924 .... Mrs. P. P. McCain, Sanatorium
1925 .... Mrs. I. W. Faison, Charlotte
1926 .... Mrs. J. Howell Way, Waynesville
1927 .... Mrs. R. S. McGeachy, Kinston
1928 .... Mrs. B. J. Lawrence, Raleigh
1929 .... Mrs. A. B. Holmes, Fairmont
1930 .... Mrs. J. H. Macon, Warrenton
1931 .... Mrs. W. B. Murphy, Snow Hill
1932 .... Mrs. R. S. McGeachy, Greenville
1933 .... Mrs. W. P. Knight, Greensboro
1934 .... Mrs. J. W. Huston, Asheville
1935 .... Mrs. J. Buren Sidbury, Wilmington
1936 .... Mrs. C. P. Eldridge, Raleigh
1937 .... Mrs. J. R. Terry, Lexington
1938 .... Mrs. W. T. Rainey, Fayetteville
1939 .... Mrs. Joseph A. Elliott, Charlotte
1940 .... Mrs. C. F. Strosnider, Goldsboro

PROGRAM

Hostesses—Moore and Hoke County Doctors' Wives

MONDAY, MAY 13

3:00 p. m.—Drive to State Sanatorium.
Tea—Mrs. P. P. McCain's Residence.

8:30 p. m.—"Keno"—Pine Room—Carolina Hotel.
"Being Clinic'd"—by Mrs. Knight, Mt. Olive.

TUESDAY, MAY 14

9:00 a. m.—Executive Board Meeting.

9:30 a. m.—Opening Session—State Society.

10:30 a. m.—Annual Auxiliary Meeting, Pine Room, Mrs. C. F. Strosnider, President.

- Invocation — Rev. A. J. McKelway, Community Church, Pinehurst.
- Greetings — Mrs. W. E. Overcash, Southern Pines.
- Response — Mrs. Ben Lawrence, Raleigh.
- Reports of Officers:
  - President—Mrs. C. F. Strosnider
  - First Vice President — Mrs. J. A. Elliott (Organization)
  - Second Vice President—Mrs. A. A. Kent, Jr. (McCain Bed)
  - Third Vice President — Mrs. R. A. Moore (Loan Fund)
  - Secretary—Mrs. J. D. Freeman
  - Treasurer—Mrs. E. C. Judd
  - Corresponding Secretary—Mrs. Jack Harrell
  - Chairman of Past Presidents—Mrs. P. P. McCain.
- Reports—Committees:
  - Program—Mrs. F. R. Taylor, High Point
  - Research—Mrs. R. S. McGeachy, New Bern
  - Hygeia—Mrs. Karl Pace, Greenville
  - Press and Publicity — Mrs. Sidney Smith, Raleigh
  - Public Relations—Mrs. J. B. Sidbury, Wilmington
  - Scrap Book — Mrs. C. E. Howard, Goldsboro
  - History—Mrs. Erick Bell, Wilson
  - Exhibits—Mrs. C. D. Thomas, Sanatorium
  - Legislature—Mrs. Hamilton McKay, Charlotte
  - Jane Todd Crawford Memorial—Mrs. T. L. Lee, Kinston
  - Memorial — Mrs. I. H. Manning, Chapel Hill
- Reports—Special Committees
- Unfinished Business
- New Business
- Presentation of Advisory Board
  - Dr. Hubert Haywood, Raleigh
  - Dr. S. D. Craig, Winston-Salem
  - Dr. W. H. Cobb, Goldsboro
- Address—Dr. William Allan, President Medical Society of the State of North Carolina.
- Report—Councillor to Southern Medical Association, Mrs. J. Buren Sidbury.
- Address—Mrs. Charles P. Corn, President Auxiliary to the Southern Medical Association.
  Introduced by Mrs. J. B. Sidbury.
- Installation of New Officers.

2:00 p. m.—Drive to Orchid Gardens, Knollwood, and to Matinee, Carolina Theatre, Southern Pines.

Evening —With Medical Society.

WEDNESDAY, MAY 15

10:00 a. m.—Bridge—Women's Card Room, Carolina Hotel.

MINUTES OF THE AUXILIARY TO THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

Annual Meeting, Tuesday, May 14, 1940

The annual meeting of the Auxiliary to the Medical Society of the State of North Carolina was held at ten-thirty on the morning of May 14 in the Pine Room of the Carolina Hotel, Pinehurst. Mrs. C. F. Strosnider, president of the Auxiliary was in the chair. The invocation was delivered by the Reverend A. J. McKelway of Pinehurst. Mrs. P. P. McCain welcomed us and Mrs. W. P. Knight responded.

The president stated that her report would not be given at this time, but would be printed later. She appointed two committees: one on Resolutions, composed of Mrs. K. B. Pace, Greenville; Mrs. Wingate Johnson, Winston-Salem, and Mrs. A. H. Elliot, Wilmington; and one to approve the minutes, composed of Mrs. J. A. Elliott, Charlotte; Mrs. Harry Winkler, Charlotte, and Mrs. J. Buren Sidbury, Wilmington.

Mrs. J. A. Elliott, first vice president in charge of organization, reported a total membership to date of 605. The full reports of the first, second, and third vice presidents were given, and handed to the secretary to be filed. The treasurer, Mrs. E. C. Judd, presented a detailed and informative report. She moved the adoption of her report, which was seconded by Mrs. J. W. Vernon. The report was accepted, with acknowledgment of Mrs. Judd's faithful efficiency. Mrs. Judd announced that Mrs. Strosnider had presented her office expense fund of $100.00 as the beginning of a fund to be applied to the upkeep of the bed at Western Sanatorium. Awards were made as follows: Mrs. C. F. Strosnider's prize of $5.00 to the eighth district for the largest number of paid up memberships by May 1; Mrs. P. P. McCain's prize of $5.00 to New Hanover County, for the largest contribution to the McCain Bed Fund; Mrs. R. A. Moore's prize of $5.00 to Forsyth county for the largest contribution to the Student Loan Fund. Mrs. P. P. McCain outlined the entertainments which had been arranged for our pleasure. Corsages in the form of exquisite orchids were presented by the hostess auxiliaries to Mrs. C. F. Strosnider, Mrs. Charles P. Corn and Mrs. William Allan, wife of the president of the Medical Society of the State of North Carolina.

Comprehensive reports were made by the chairmen of standing committees. Mrs. R. S. McGeachy, Chairman of the Research Committee, presented a paper on the life and work of Dr. L. B. McBrayer, paying tribute to his great personality and ability. The auxiliary members sat with bowed heads for a minute in memory of Dr. McBrayer. The Hygeia chairman, Mrs. K. B. Pace, reported that $47.10 in commissions had been turned over to the McCain Bed Endowment Fund. Mrs. T. L. Lee, chairman of the Jane Todd Crawford Memorial Fund, reported that $50.00 had been contributed and sent to the Southern Medical Auxiliary for this Fund. She presented the recommendation of the executive committee that a sum be contributed by the Auxiliary each year to this fund, the amount to be decided by the executive committee.

Mrs. R. S. McGeachy, chairman reporting for the special committee appointed to investigate the advisability of the Auxiliary's procuring advertisements for the North Carolina Medical Journal, presented the recommendation from the executive committee that this responsibility be accepted. Mrs. P. P. McCain seconded the motion. After some discussion the motion was carried. The president appointed Mrs. R. S. McGeachy as chairman of the committee to propose a working plan for this project.

A motion was made by Mrs. P. P. McCain, seconded by Mrs. K. B. Pace, that we support a bed at the Western Sanatorium. The motion was approved. Mrs. Strosnider appointed as chairman of a committee to name this bed, Mrs. J. W. Vernon, of Morganton, with authority to select two other members for her committee. She chose Mrs. Alfred Kent, Jr., of Granite Falls, and Mrs. S. M. Bittinger, of Black Mountain.

The secretary was instructed to write notes of condolence to Mrs. H. W. McKay, on the death of her father, and to Mrs. James Keiger, on the death of her husband.

The death of Mrs. J. W. McAnally, High Point, was the only one reported for the Memorial Service prepared by Mrs. I. H. Manning.

Mrs. J. Buren Sidbury, Councillor for the Southern Medical Auxiliary, introduced our guest speaker, Mrs. Charles P. Corn of Greenville, S. C., president of the Southern Medical Auxiliary. Mrs. Corn spoke delightfully on the subject "Present Day Opportunities of Service for the Doctor's Wife."

Dr. William Allan, president, brought greetings from the Medical Society of the State of North Carolina.

Mrs. J. Buren Sidbury moved, and Mrs. J. H. McGeachy seconded, that Mrs. Strosnider appoint the three delegates we are allowed, and three alternates, to the National Medical Auxiliary, meeting in New York, June 10-14. The Resolutions Committee report was read by Mrs. K. B. Pace, thanking the hostess auxiliaries for the many courtesies extended us during our stay in Pinehurst.

In the absence of the chairman, Mrs. Ben Lawrence, the report of the nominating committee was read by Mrs. J. R. Terry. Since the nominating committee had failed to procure second and third vice-presidents, Mrs. Ben Kendall, Shelby, moved, seconded by Mrs. T. L. Lee, that these be nominated from the floor. The following slate was then presented: President, Mrs. C. R. Hedrick, Lenoir; president-elect, Mrs. Sidney Smith, Raleigh; first vice-president, Mrs. C. F. Strosnider, Goldsboro; second vice-president, Mrs. F. M. Houser, Cherryville; third vice-president, Mrs. J. S. Hooker, Chapel Hill; corresponding secretary, to be appointed by the president; recording secretary, Mrs. J. D. Freeman, Wilmington; treasurer, Mrs. E. C. Judd, Raleigh. Mrs. Terry moved the acceptance of this report, seconded by Mrs. Frederick Taylor. The report was unanimously accepted. Mrs. P. P. McCain, in appropriate words, installed the officers, who responded by pledging their loyalty and support to the objectives and ideals of the Auxiliary.

Mrs. Strosnider presented the gavel to Mrs. Hedrick with a sincere wish for her success. Mrs. Hedrick accepted the gavel with words of "gratitude for the confidence placed in me and the honor bestowed upon me."

The meeting adjourned, with the members standing to express their thanks to Mrs. Strosnider for so successfully conducting the Auxiliary through a year of great activity and rare achievement.

Respectfully submitted,
LIDIE PENTON FREEMAN,
Recording Secretary.

MINUTES OF THE EXECUTIVE BOARD

Final Meeting—May 14, 1940

The Executive Board of the Woman's Auxiliary to the Medical Society of the State of North Carolina met for the last meeting of the year at the Carolina Hotel in Pinehurst, North Carolina, on May 14. The session was held in the Pine Room.

The meeting was called to order by the President, Mrs. C. F. Strosnider. This was followed by the roll call, twenty-five being present. The reading of the minutes was dispensed with, since a copy will be published in the Transactions.

The first order of business was the report on the Jane Todd Crawford Memorial by the Chairman, Mrs. Thomas Leslie Lee. After the report, a motion was made by Mrs. J. W. Vernon and seconded by Mrs. Joseph A. Elliott that our Auxiliary make a contribution each year to the Jane Todd Memorial Fund, the amount to be decided by the Executive Board at its meeting in the Fall. This motion was to be carried to the Auxiliary in the form of a recommendation from the Board. Mrs. Elliott and Mrs. Vernon were asked to write the recommendation.

Mrs. Strosnider next told of a letter received from Mrs. Packard of the National Board warning that the Auxiliaries throughout the country should be careful not to affiliate with any other organized association.

Mrs. Strosnider, as the Chairman, asked that a file be made of each doctor's wife's interests and affiliations. This would be helpful to all officers and councillors, and would prove of value in carrying out a legislative program.

Mrs. R. S. McGeachy had the floor next. Dr. Long had written her, offering the Auxiliary the privilege of selling advertising space in the North Carolina Medical Journal. A committee, consisting of Mrs. McGeachy, Mrs. McCain and Mrs. Sidbury, was appointed to write a recommendation to be presented to the Auxiliary. The recommendation read that the Auxiliary accept the proposition of Dr. Long—namely, the selling of advertising space in the North Carolina Medical Journal.

Mrs. R. A. Moore made an appeal for the support of the Loan Fund. Six loans had been granted in the last ten years.

Under New Business a motion was made by Mrs. Karl Pace that a telegram be sent to Mrs. M. L. Stevens, expressing regret at her absence from the meeting. Mrs. McCain seconded the motion, which was unanimously carried.

The President appointed Mrs. Judd and Mrs. Elliott a committee to aid her in arranging material for the transactions.

Mrs. Strosnider suggested that as full reports as time would allow be made by the Chairmen of various committees, as this was a splendid way in which the aims, methods, and activities could be explained and interpreted to the Auxiliary.

There being no further business, the meeting was adjourned.

REPORTS OF OFFICERS

Report of President-Elect

As president-elect my duties have been mostly a preparation for the real work that is ahead of me the coming year as president. To aid me in this preparation, our president, Mrs. Strosnider, has assigned to me the duty of reading over the transactions of the Auxiliary since its organization in 1923 at the annual meeting of the State Medical Society. I was also asked to study and make a report on the duties of the Standing Committees.

I have been active in my local Auxiliary and have attended all of its meetings.

I am very grateful to Mrs. Strosnider for the many helpful suggestions to aid me in my work as president. All that I could wish for is that I will be able to carry on the Auxiliary work as successfully as she has done this year.

Respectfully submitted,
STELLA L. HEDRICK,
President-Elect.

Report of First Vice President and Chairman of Organization Committee

As Chairman of the Organization Committee of the Auxiliary to the Medical Society of the State of North Carolina, I wish to make the following report of work done during 1939-1940.

Your Organization Committee is made up of your ten Councillors, with the First Vice-President as Chairman. Each Councillor, being involved in the affairs of her own district, is naturally interested in its problems and wants not only to give out suggestions, but to be called on for help.

The final aim of the Organization Committee is to strengthen and to extend the Organization of the Auxiliary. The immediate aim, during this year, has been first, to work out more fully a list of names and addresses of officers of district and county auxiliaries, so that contacts between auxiliaries within the State, and between officers and chairmen of the various units may be made more easily possible. Through contacts thus encouraged, information may be spread, and interest increased, which will surely bring about more thorough organization and an increase in the number of members, and in the number of auxiliaries. In forwarding this aim, much writing has been done, and funds have been spent for typing and postage. Among other things, cards and letters were sent to all Councillors, in October, February, December, March, and in May, and to county auxiliary presidents and others, in December, to secure correct names and addresses and other information for the Organization Sheet, and to give information on organizing.

Tentative Organization Sheets were given to all Board Members on October 12, with the request that they be corrected and returned. Splendid cooperation of county presidents, Councillors and other Board members has a tangible result in the information available to you now in the Organization Sheet which was mailed to Board Members in March and published in the April **North Carolina Medical Journal.** It is as nearly complete as it has been possible to make it, though there is still more to be desired. May it be an aid to a more closely organized and increased membership! And may it be a basis from which the Organization Committee of the coming year may work out Organization Sheets showing names and addresses of all the officers and chairmen of every district, county and local auxiliary as completely as this year's official stationery shows the names and addresses of the officers and chairmen of the State Auxiliary. It is the wish of this Chairman that such a set-up can be published in the **North Carolina Medical Journal,** not later than January 1, 1941. Such a reference will greatly facilitate the membership increase.

As a second step, toward the aim of the year, leaflets by Mrs. Bonar White, "What an Auxiliary Member Should Know", were secured from the National Organization Chairman and mailed to each Councillor in order to supply correct information.

As the third step, this Committee has, as our President wished, stressed "reminders" of dues. Seven Councillors reported that they have seen personally or written letter or card "reminders" to each doctor's wife in their districts, unless this responsibility was assumed by the county officers. One Councillor is not well. The other two have made contacts in every county in their districts.

There are, in our state, fifteen actively organized county auxiliaries which have been reported to me. They are: Craven, New Hanover, Sampson, Wayne, Hoke, Robeson, Wake, Person, Cleveland, Guilford, Forsyth, Rockingham, Wilkes-Allegheny, Caldwell and Catawba. Only twenty-three meetings have been reported—there must have been others. The attendance of some of the most active groups was not reported. The average of the three county meetings reported was thirteen. The attendance of the one district meeting reported was twenty-five. The total paid-up membership of the State Auxiliary on May 20, 1939, was 423. It is, at this writing, 605.

Mrs. Walker reports five memberships secured in the First District.

Although Mrs. Ramsey of the Second District did not come into office until late in the year, she reports the one newly organized county, Craven.

Mrs. Brewer of Third District reports the New Hanover-Pender-Brunswick and Sampson Auxiliaries 100 per cent paid-up membership; also, the annual Hanover Bridge Tournament, which netted $101.00.

Though still unorganized, many counties are reported at work. The Fourth District has one contact person, Mrs. W. G. Suiter, who alone has secured twenty-four dues from her county, Weldon.

Mrs. Rainey, Councillor of the Fifth District, tells of a District Meeting in October in Mrs. McCain's home. There was a discussion of objectives of the State Auxiliary, and later a visit to the McCain Bed patient, and dinner at the Sanatorium with the husbands. Robeson gave a subscription to Life magazine to the McCain Bed patient.

Mrs. Lawrence, of the Sixth District, has visited four unorganized counties and has secured a doctor's wife in each of three counties to arouse interest in membership and auxiliary projects and to serve as contact person for receiving and dispensing information.

Mrs. Winkler, of the Seventh District, writes of a tea held at the Mint Museum in Charlotte, which had as honorees the twenty-five wives of doctors who have most recently moved to Charlotte to live. She reports seventy memberships.

Mrs. Knight, of the Eighth District, reports the greatest number of meetings held in any one County —four, and an extra meeting of the officers and one of the District in Guilford. Their Christmas meeting was outstanding, and most enjoyable. Beautifully wrapped packages, brought to this meeting by the members, were sent to the McCain Bed patient. Another feature of it was "a white elephant" sale which raised money for the Endowment Fund.

Mrs. Vernon, of the Ninth District, reports splendid response to her efforts in soliciting members in Burke and Catawba Counties, and a particularly active Auxiliary in Caldwell County.

Among other things, this group observed Doctor's Day by placing flowers in the offices of all doctors.

From Mrs. Johnson, of the Tenth District comes news that increased interest within her district gives hope that local units may get under way before long.

No programs for lay meetings were reported.

Early in the year, at the President's request, with the help of Mrs. G. M. Cooper, I completed twenty-five copies of the "History and Duties of Research Chairman", and distributed them to the Board Members. I sent much data to President-Elect Hedrick that she might familiarize herself with the work of the Auxiliary; and I worked out a "letter of information" for would-be organizing County Auxiliaries; and have kept a note-book or file of work done and of histories of the various chairmanships which is to be turned over to the incoming Chairman of Organization.

I have attended the three Board Meetings and the Seventh District Meeting in Rutherfordton, where I took part on the program. In answer to requests from several Councillors, I have sent about 175 "Won't-you-become-a-member" post cards to be used in their respective districts. On the first of May, an Organization Report was sent to National.

Finally, I wish to thank each Councillor and Officer for the cooperation and work that has made this report possible; and to recommend that each Councillor get a Handbook, subscribe to the News Letter and keep a file of work done for reference.

I move that this report be accepted.

Signed:

MRS. JOSEPH A. ELLIOTT,
Chairman.

Report of Second Vice President, and Chairman of the McCain Bed Fund

How much has the McCain Bed Endowment grown since 1938?

It was then $1,064.06.

1939-1940's report from your McCain Bed Chairman:

This year I combined my historical report of the McCain Bed as compiled in 1939 in the form of a letter-pamphlet to our State Medical Auxiliary members. This letter was an S.O.S. message from your Second Vice President to members and prospective members of our Auxiliary to the Medical Society of the State of North Carolina.

There were 400 of these letters printed and mailed out thus:

1. To Councillors went eight copies for distribution.

2. Approximately 140 letters were mailed to one or more representatives from each county in our state. A second copy was enclosed. The McCain Bed support was one of the very first objectives of our Auxiliary. It has proved a most worthwhile project, for during the twelve years of its existence we have served a doctor, a doctor's daughter, two nurses, two small children, three young girls, a boy and a young man. You have, no doubt, played your part each year in paying your own membership dues. Let each of you return home and tell other doctors' wives of the work we, as an Auxiliary, carry on. For only through increased membership will we be able to spread our good work to the newer Tuberculosis Sanatoriums.

Total amount sent in to our Treasurer for McCain Endowment fund—county and individual contributions—$270.10.

Methods suggested for aiding our McCain Bed Project.

I. Sending contributions individually, or as county Auxiliaries, to the upkeep of the McCain Bed or to the Endowment Fund.

Recommendations your Chairman makes are:

I. To continue interest in up-keep of our bed, and to show more personal interest in our patient.

II. To add to Endowment Fund as rapidly as possible.

III. To take a bed at Western Sanatorium at Black Mountain just as soon as our finances permit.

News from Our McCain Bed Patient

Mr. S. L. Sawyer from Tyrrell County was our guest patient from October 1938-February 14, 1940. For approximately sixteen months the Medical Auxiliary McCain Bed has served a twenty year old man who needed and appreciated the help. Mr. Sawyer left our McCain Bed on February 14, 1940, much improved. Our President has received a most appreciative letter of the service of our bed and the gifts received from you during his stay.

On March 11, Dr. P. P. McCain, Superintendent of the North Carolina Sanatorium for the treatment of tuberculosis, wrote recommending Miss Inez Morris, a graduate nurse from Sanford, as our guest patient. Miss Morris has had quite a bit of treatment, having been a tuberculosis patient for a number of years. She has recently had a rib resection operation and will probably need to be in the Sanatorium six or eight months, or longer. "We feel that the operation will give her a good chance of eventually recovering her health, providing she can remain in the Sanatorium for a period of time," writes Dr. McCain. Can we not take time to show her we wish for her a speedy recovery and help make her happy as our guest patient?

I wish to express my appreciation for individual contributions and for county auxiliary contributions received during my term of office.

Closing with the answer to my introductory question:

Our McCain Bed Endowment has gained a little more than $600.05 during my two years in office, making the fund now, at 10 o'clock, May 14, 1940, stand at $1,724.04, according to our Treasurer's record.

Our McCain Bed Endowment Fund goal is $10,000. Will you help your organization attain this goal?

Respectfully submitted,

MRS. A. A. KENT, Jr.

Report of Third Vice President and Chairman of Student Loan Fund

In response to the request of our president, your chairman has compiled data concerning the Student Loan Fund, obtaining the larger part of the material from the annual reports of the State Auxiliary for the past ten years.

Your chairman has written forty-two letters to state officers and chairmen, district chairmen, and auxiliary presidents in the interest of soliciting funds for the Student Loan Fund. The result of this solicitation will be given by our treasurer, to whom all money was to be sent.

A prize of five dollars has been offered for the auxiliary making the largest contribution to the Student Loan Fund.

One request for a loan of one hundred dollars has been granted this year.

Two requests for loans have been received in the past week. These requests are being given consideration at the present time.

The complete financial statement of this fund will be given by our treasurer, Mrs. E. C. Judd.

The Student Loan Fund of the Medical Auxiliary of the State of North Carolina came into being ten years ago this May. A group of doctors' wives met at an auxiliary meeting in Raleigh such as this one is today and created this fund to provide for the education of doctors' children, who by some circumstance might be forced to ask for a temporary loan. It is true that this situation does not often arise, but occasionally there is an unforeseen circumstance which is liable to come up in the lives of families in any walk of life, and what a fine and glorious thing it is for us among ourselves to come to the aid of our fellow colleague rather than have him or his family go on the outside for help!

Since this fund has been created, we have had the privilege of helping six such students, and we know from their records that our efforts have not been in vain.

This loan fund is to be used by students in their Junior or Senior College year or by Post Graduates.

What a disheartening blow it is to a young life to have reached this period in his college work and then to find that he must give up because of finances!

What an opportunity it is for us to see him through this crisis, and we can be assured of his serious purpose if he has gone this far and is worth all that we may invest in his education!

Respectfully submitted,

MRS. R. A. MOORE.

Report of the Corresponding Secretary

It has been a real pleasure to serve as corresponding secretary of the Auxiliary to the Medical Society of the State of North Carolina during the year 1939-1940.

Since Mrs. Strosnider has used her husband's secretary to do the bulk of her correspondence, my duties have followed in other channels than writing letters.

I have handled the following correspondence:

Two different messages to board members, a total of sixty-four.

A report to our councillor, Mrs. Pittman, telling her of our Wayne County Auxiliary meeting.

Finding and buying the rubber stamp for the Auxiliary and stamping four hundred U. S. Postal cards. Postal cards were written to the ten councillors.

Transactions of the Woman's Auxiliary to the Medical Society of the State of North Carolina were mailed to the board members, totaling thirty.

Besides this correspondence I have acted as "Handy Andy" to our president. I have called members of the Wayne County Medical Auxiliary a number of times, written letters or cards to the members, and collected dues from members in Goldsboro.

I was present with our State President at the meeting of the Sampson County Medical Auxiliary.

Respectfully submitted,

FLORRIE H. HARRELL.

Report of Treasurer

Mrs. E. Clarence Judd

Receipts and Disbursements, May 20, 1939-May 20, 1940

General Expense Fund

Balance on Deposit May 20, 1939	$194.30	
Dues 1939-1940 for 605 members (50 cents of each dollar)	302.50	
Dues 1940-1941 for 6 members (50 cents of each dollar)	3.00	
		$499.80

Upkeep of McCain Bed Fund

Balance on Deposit May 20, 1939	$292.48	
Dues 1939-1940 for 605 members (50 cents of each dollar)	302.50	
Dues 1940-1941 for 6 members (50 cents of each dollar)	3.00	
Contribution: Mrs. C. F. Strosnider (President's Expense Account)	100.00	
		$697.98

McCain Endowment Fund

Amount in Savings May 20, 1939	$1,421.66
Contributions:	
New Hanover County Auxiliary	114.00
Wake County Auxiliary	48.50
Forsyth County Auxiliary	11.50
Sampson County Auxiliary	11.25
Guilford County Auxiliary	10.00
Craven County Auxiliary	6.00
Robeson County Auxiliary	5.00
Hoke County Auxiliary	5.00
Wayne County Auxiliary	5.00
Hygeia Subscriptions (Mrs. K. B. Pace)	47.10
Mrs. George Carrington	4.00
Dr. C. C. Henderson	2.00
Mrs. W. C. Johnson	2.00
Mrs. J. L. Reeves	2.00
Mrs. J. A. Elliott	1.00
Mrs. T. M. Pittman	1.00
Mrs. J. R. Westmoreland	1.00
Mrs. V. H. Duckett	1.00
Mrs. W. T. Rainey	1.00
Mrs. J. L. Seawell	1.00
Miss Olivia Kent	1.00
Miss Adelaide Trotter	1.00
Dr. Pollock	1.00
Prize given by Mrs. J. A. Elliott, won and contributed by Wake County Auxiliary	5.00
Prize given by Mrs. C. F. Strosnider, won and contributed by the Eighth District	5.00
Prize given by Mrs. P. P. McCain, won and contributed by New Hanover County Auxiliary	5.00
Interest	27.62
	$1,746.63
Tax	1.34
	$1,745.29

Student Loan Fund

Balance in Savings May 20, 1939	$ 709.79
September 16, 1939, received payment on Loan (Miss Margaret Knight)	10.00
Contributions:	
Forsyth County Auxiliary	11.50
Guilford County Auxiliary	5.20
Mrs. W. C. Johnson	2.00
Mrs. J. A. Elliott	1.00
Mrs. J. L. Reeves	1.00
Prize given by Mrs. R. A. Moore, won and contributed by Forsyth County Auxiliary	5.00
Interest	12.68
	$ 758.17
Tax	.65
	$ 757.52
Loan to Miss Margaret Whittington	100.00
	$. 657.52

Loans

June 8, 1936, Loan to Miss Margaret Knight ($60). (1938 pd. $25, 1939 pd. $10, 1939 pd. $10)	$ 15.00
October 16, 1936, Loan to Miss Margaret Knight	140.00
February 10, 1937. Loan to Miss Margaret Whittington	100.00
August 24, 1939, Loan to Miss Margaret Whittington	100.00
	$ 355.00

Disbursements

Mrs. C. F. Strosnider (President's Office Expenses) (Contributed to Upkeep of Bed Fund)	$ 100.00
Edwards and Broughton (1940 stamps)	.42
Andrews Printing Company (Stationery)	17.50
Falls Print Shop (Historical Sketches)	8.00
Edwards and Broughton Company (1000 membership cards)	5.60
Stearns Engraving Company	11.00
Post Office (mailing 605 membership cards)	18.15
Mrs. E. E. Fisher (National Treasurer 408 dues)	102.00
Mrs. Alfred A. Kent, Jr. (Postage)	5.30
Mrs. W. P. Knight (Postage)	5.96
Mrs. J. A. Elliott (Organizing Expenses)	16.00
Mrs. Ben Lawrence (Postals)	3.50
Mrs. C. D. Thomas (Printing Poster)	4.00
Miss Lunette Barber (Typing roll and Treasurer's report)	7.00
Mrs. E. C. Judd (Treasurer Expense Account)	15.33
Tax	.41
North Carolina Sanatorium (for patients 12 months)	222.30
	$ 542.47
Upkeep of Bed Fund	$ 697.98
Expenses for patients 1939-1940	222.30
	$ 475.68
General Expense Fund	$ 499.80
General Expenses 1939-1940	320.17
	$ 179.63
Amount on Deposit McCain Endowment Fund	$1,745.29
Amount on Deposit Student Loan Fund	657.52
Loans	355.00
	$3,413.12

Respectfully submitted,
MRS. E. C. JUDD,
Treasurer.

REPORTS OF COMMITTEE CHAIRMEN

Report of Program Chairman

Your program chairman has had a most inactive year, due, we hope, to the fact that the outline compiled and distributed among our officers at the beginning of the year was so comprehensive that few inquiries were necessary. However, all inquiries have been promptly answered to the best of my ability, and I hope, to the satisfaction of all concerned.

Respectfully submitted,
MRS. F. R. TAYLOR.

Report of Research Chairman

As Research Chairman, I have sent to Mrs. Leslie Moore, Southern Auxiliary Chairman of Research, Dallas, Texas, a clipping from the News and Observer on the dedication of the new Medical building at Chapel Hill, and also a copy of the Transactions of the Woman's Auxiliary to the State Medical Society of the State of North Carolina for 1939. These are to be placed in the files of the Southern Lending Library.

I am also preparing a paper on the life of Dr. L. B. McBrayer, a real pioneer in the work of tuberculosis in North Carolina, for the State meeting at Pinehurst.

Respectfully submitted,
MRS. R. S. McGEACHY,
Chairman of Research.

Memorial Service, Auxiliary to the Medical Society

Mrs. I. H. Manning, Chairman

The Lord gave and the Lord hath taken away, Blessed be the name of the Lord.

During the past year God took from our midst Mrs. J. W. McAnally of High Point.

It was the voice of Jesus calling. His loving hands stretched out to draw them near.

"I am the resurrection and the life, saith the Lord; he that believeth in me shall never die." St. John XI, 25-26.

And now, Lord, what is my hope; truly my hope is ever in thee. I know that my Redeemer liveth. I heard a voice from heaven, saying unto me. From henceforth blessed are the dead who die in the Lord, even so saith the Spirit; for they rest from their labors.

Let us pray:

O, Lord Jesus Christ, who by thy death didst take away the sting of death; Grant unto us thy servants, so to follow in faith where thou hast led the way, that we may at last fall asleep peacefully in thee and awake after thy likeness; through thy mercy, who livest with the Father and the Holy Spirit, one God, world without end, and say as He bade us say:

Our Father who art in heaven, Hallowed be thy name, Thy Kingdom come; Thy will be done on earth, as it is in heaven. Give us this day our daily bread and forgive us our trespasses as we forgive those who trespass against us, and lead us not into temptation, but deliver us from evil. For thine is the kingdom, the power and the glory, forever and ever, Amen.

Thou who in thy still rest
Our dear ones safe dost keep;
Thou who shalt bring them back
One day from their long sleep,
Oh, keep us by Thy grace,
That we at last may be
When that bright morning dawns
At home with them and Thee.
Father, in thy gracious keeping,
Leave we now Thy servants sleeping.

Report of Hygeia Chairman

Mrs. K. B. Pace reported that $47.10 in commissions had been turned over to the McCain Bed Endowment Fund.

Report of the State Chairman of Press and Publicity

In the fall of 1939 the Chairman of Press and Publicity requested each of the ten councillors to appoint a county or district publicity chairman. This was necessary in order to have complete reports of every single auxiliary meeting held in North Carolina this season. These accounts were intended for the National Press and Publicity Chairman, and the National President. Three secretaries responded to the request. Mrs. C. S. Barker of New Bern sent a very interesting account of the organization meeting of the Craven County Auxiliary; Mrs. Ralph E. Lore of Lenoir sent a report of the meeting of the Ninth District, accompanied by a newspaper clipping of same; and Mrs. Harry Winkler of Charlotte a report concerning the Seventh District, accompanied by newspaper clipping of the meeting.

With an account of the fall meeting of the State Board of Directors, these reports were combined and sent to Mrs. J. P. Simonds, National Press and Publicity Chairman, for publication in the Journal of the American Medical Association. These reports should be sent to National monthly, but inadequate information has made this impossible this season. It is now time to report Spring meetings of the various county auxiliaries, and the State Press Chairman will again endeavor to obtain a report from each of the ten districts and their respective county organizations.

Two newspaper stories were released for publication in the newspapers of the state by this chairman—one in the fall of 1939 concerning the meeting of the Board of Directors and the proposed program of work of the Auxiliary for the year; the other on March 31, this year, announcing preparations for the state and national meetings and publicizing the philanthropic, legislative and social program of the State Auxiliary. The last news release was accompanied by a layout of pictures of officers of the Auxiliary. Copies of each of these news releases were sent to newspapers in Asheville, Charlotte, Greensboro, Winston-Salem, Durham, Raleigh and Wilmington. The stories and pictures were used in their entirety by the News and Observer, Raleigh. Many newspaper clippings of Auxiliary activities have been collected for the State Scrap Book Chairman.

The State President, Mrs. C. F. Strosnider has been very liberal with her time and energy in furnishing this chairman detailed information for use in various press reports. She has been prompt and efficient in complying with all requests made of her, and has made valuable suggestions concerning the publicity of the State Auxiliary.

This chairman wishes to acknowledge the assistance of the President, as she could not possibly have served, having so little knowledge of the inner workings of the State organization, except for the patient prompting of the President.

Since coming on to the Board of this organization, this chairman has read and studied the reports of former chairmen, the minutes and reports of annual meetings of the State and National auxiliaries, the Constitution and By-Laws of the State Auxiliary, editorials and sections devoted to medical economics in the medical journals and all similar literature aiding us to our goal of the year, that of being informed so that we may inform others. This chairman has recommended that every effort be made to stimulate the reading of the North Carolina Medical Journal, the Journal of A. M. A., Southern Medicine and Surgery, Hygeia and similar types of literature by the individual members of the State Auxiliary.

A copy of the Handbook for State Auxiliaries has been purchased from the National Chairman of Printing, this handbook to become the permanent property of the Press and Publicity Committee.

This chairman wishes to acknowledge communications from Mrs. Hamilton W. McKay, legislative chairman, and Mrs. Joseph A. Elliott, organization chairman, both of whom furnished material for use in press notices.

Respectfully submitted,
MELISSA BROWNE SMITH,
State Chairman of
Press and Publicity.

Report of Public Relations Chairman

The function of the Public Relations chairman of the Auxiliary to the Medical Society of the State of North Carolina is to interpret the aims and attitudes of the State Medical Society with regard to all questions relating to the public. Our National chairman, Mrs. R. E. Mosiman, says: "All organizations, business or professional, are faced with the problem of public attitudes. In every community new forces are restricting the influence once held by the banker, teacher, doctor, editor, manufacturer, minister, the leader in social circles. Leaders of opinion have multiplied many times. Hollywood influences fashions in clothes and manners far more than do the social leaders in a community. Newspaper columnists have taken over the position once held by editors. Radio commentators are listened to much more carefully than are men with far wider experience in business and professional affairs. Business and the professions are now confronted with a confused public opinion which, if not properly directed, may be translated into terms of definite repression, if not control."

Most of us are members of civic and social organizations and are privileged to serve on health committees. Thus we are in key positions to interpret the aims and objectives and the attitudes of the American Medical Association and of the State Medical Society—if we take the time to study and understand them. Last year our members did much to help the State Medical Society create interest and educate the public to the desirability of the state immunization law for diphtheria and the law requiring physicians' certificates before marriage, and the law requiring prospective mothers to have Wassermann tests made. We studied and understood these laws and thus prepared ourselves to serve. National Health Legislation will be one of the most important items considered by the 1940 Congress. We can study this legislation and be prepared to promote the attitude of the A. M. A. We can urge the organizations to which we belong to appoint committees to study health legislation and to report on it before the organization takes action. So many of our clubs vote to write the senators or congressmen begging them to support certain bills when the membership really knows nothing about the legislation under consideration.

This past year each councillor has been sent articles from the National Chairman explaining the national legislation. Our president, Mrs. Strosnider, has spoken and written upon the attitudes and aims of the A. M. A. and the State Medical Society. It is difficult to evaluate just how much has been done because this is one job that has to be done by each and every doctor's wife. The chairman can send out the material for study, and she has done this. She has also sent out the questionnaires to try to get a cross section idea of what is being done in the various districts. The response has not been particularly gratifying. But she realizes that this is a matter of education and that education is always a slow process but a most vital one, and that it is never ending because there is always a new group coming into active relationship with the Auxiliary.

MRS. J. BUREN SIDBURY, Chairman
Public Relations.

Report of the Scrapbook Chairman

All clippings which have been received, or have been clipped by the chairman have been pasted in the scrapbook and marked 1940. The chairman wishes to thank those auxiliary members who were thoughtful enough to mail clippings to her.

Respectfully submitted,
MILDRED GILL HOWARD.

Report of Historian

Attended District meeting in May.

Attended Board meeting at Sanatorium in October.

Prepared and distributed to Board members copies of History and Duties of Historian.

Mailed in fall historical report to Mrs. W. W. Crawford, Historian of the Woman's Auxiliary to the Southern Medical Association.

Contacted councillors and chairmen of standing committees in regard to activities in their respective fields.

Attended Board meeting in April.

Prepared and mailed two histories—one complete from organization, and one of the year's work—to Mrs. John J. Ryan, National Historian.

Completed and recorded history through year 1939-40.

Respectfully submitted,
(MRS. ERICK) INZA T. BELL.

Historical Report for 1939-40

The Auxiliary to the Medical Society of the State of North Carolina, with approximately five hundred members, will celebrate its seventeenth anniversary when it convenes in Pinehurst, May 13, 14, 15, meeting conjointly with the Medical Society of the State of North Carolina.

Through the Medical Auxiliary, the wives of North Carolina doctors pursue a busy course of educational and philanthropic activities, along with pleasant social contacts. This season has witnessed unusual activity among the Officers and Board Members.

Mrs. C. F. Strosnider, President of the Auxiliary, in the plan for the year's work (1939-40) adopted the slogan "Be Informed and Inform Others", as to history and objectives of Auxiliary, recent health laws, socialized medicine, etc., in order to be able to disseminate knowledge to the lay public. In order to facilitate this, she urged each Board Member to keep a loose leaf note-book containing By-laws and copies of history and duty of each departmental chairman. These information sheets give, in convenient form, the past, present and future of the Officers and Committees. In addition, the President prepared a questionnaire to be used as an examination for Auxiliary members.

The Auxiliary has held two Board Meetings during the year. As is customary, the fall meeting was held Thursday, October 12, 1939, at Sanatorium, in the home of Mrs. P. P. McCain, organizing and first President of the North Carolina Auxiliary, and our Chairman of Past-Presidents.

At this meeting, the aforementioned information sheets were distributed, a tentative program and budget were submitted and approved. A nominating committee was appointed, as was also an official delegate to the Southern Medical Convention. The President appointed a legislative chairman and chairman of Jane Todd Memorial, which is a project of the Southern Medical Auxiliary.

The Auxiliary endorsed and supported three bills, very vital to the public health of North Carolina, passed by the last General Assembly. The bills included the Immunization bill against diphtheria; a marriage license law, requiring all applicants to be examined for venereal disease, tuberculosis and insanity; and a law requiring all pregnant women to have Wassermann blood tests.

The second Board Meeting was held Friday, April 12, 1940, in Goldsboro, at the home of Mrs. C. F. Strosnider, President.

At this meeting, the report of a tentative program for the State Convention, to be held at Pinehurst in May, was given. The speaker is to be Mrs. Chas. P. Corn, President of the Southern Medical Association.

The birth of a new child was also announced at this meeting. The Craven County Auxiliary was organized November 2, 1939, at New Bern, with Mrs. R. S. McGeachy President and Mrs. C. S. Barber, Secretary.

A letter written by a boy to the Chairman of the Student Loan Fund, asking for assistance in order that he might continue his medical course, was read and received favorably. A committee was appointed to investigate the case before making the loan.

The McCain bed at Sanatorium, supported by the Auxiliary, has had two guests this year. The first, a young man, was its occupant until January. At present, our guest patient is a nurse, daughter of a doctor who was killed while performing his duty. Robeson County Auxiliary sent a year's subscription of Life to this patient.

In addition to the McCain bed, the Auxiliary voted to support a second bed in the new Western Sanatorium, recently built at Black Mountain.

The Auxiliary has written each month interesting articles on some phase of its work, for publication in the North Carolina Medical Journal.

Rspectfully submitted,
(MRS. C. F.) ANNA STROSNIDER,
President
(MRS. ERICK) INZA T. BELL,
Historian.

History of the Auxiliary to the Medical Society of the State of North Carolina

On March 17, 1923, Dr. John Wesley Long, then President of the Medical Society of the State of North Carolina, went to Sanatorium to discuss with Mrs. P. P. McCain the organization of an Auxiliary to the State Medical Society. As a result of this conference, Mrs. C. S. Red, President of the Auxiliary to the American Medical Association, was invited to the Seventieth Annual Meeting of the Medical Society, which was held in Asheville, April 17, 18, 19, 1923.

The Auxiliary, with 53 charter members, was formally organized at this meeting, April 18, 1923, by Mrs. C. S. Red, with Mrs. Paul Pressly McCain, who is still the guiding spirit of the Auxiliary, acting as Organization Chairman. In recognition of all she has meant to the organization, she has been made Honorary President for life, with life membership on the Executive Committee; and the bed at Sanatorium, sponsored by the Auxiliary for tubercular patients has been named the McCain Bed in her honor, and in honor of her husband, who is Past President of the Medical Society and Superintendent of the State Tuberculosis Sanatorium.

A Constitution (amended in 1929—revised in 1932) and By-Laws were adopted at this meeting, and the following officers elected:

President................Mrs. P. P. McCain, Sanatorium
President-Elect..........Mrs. I. W. Faison, Charlotte

Vice-Presidents
Mrs. J. W. Long, Greensboro
Mrs. J. Howell Way, Waynesville
Mrs. J. Vance McGougan, Fayetteville
Mrs. R. S. McGeachy, Kinston
Recording Secretary..Mrs. J. A. Keiger, Greensboro
Corresponding Secretary
Mrs. A. McN. Blair, Southern Pines
Treasurer........ ..Mrs. W. L. Jackson, High Point

The state is divided into ten councillor districts, each having an alert chairman.

Councillors appointed at this first meeting were:
First District—Mrs. R. L. Kendricks, Elizabeth City
Second District
Third District—Mrs. J. A. Murphy, Wilmington
Fourth District—Mrs. K. C. Moore, Wilson
Fifth District—Mrs. T. C. Johnson, Lumberton
Sixth District—Mrs. B. J. Lawrence, Raleigh
Seventh District—Mrs. C. M. Strong, Charlotte
Eighth District—Mrs. H. Frank Starr, Greensboro
Ninth District—Mrs. A. A. Kent, Lenoir
Tenth District—Mrs. B. L. Asmorth, Marion

In his President's address, Dr. Long said of the Organization of the Auxiliary—"And now, I have the pleasing duty to announce the latest addition to our professional family, and it is a girl baby! She was born Sunday morning, March 17, 1923, at Sanatorium. I drove down from Greensboro to welcome her arrival. She is a lusty youngster with blue eyes, golden hair and a far-reaching cry that will be heard from Manteo to Murphy. Best of all, she is sponsored by Mrs. P. P. McCain, who is her godmother. This insures her proper raising and education. The little lady promises well, and says as soon as she gets out of her swaddling clothes, she will take a lively interest in the Medical Society as a whole and every doctor in it, as an individual. She proposes to gather together all the doctors' wives and daughters in the State and attend the annual meetings with them. She promises to dance with the boys and jolly the old men. She says she will look after any doctor or his family when they get sick or in trouble. Oh! she is the real thing and her name is the Woman's Medical Auxiliary of the State of North Carolina [changed in 1936 to the Auxiliary to the Medical Society of the State of North Carolina], and Mrs. C. S. Red, President of the Woman's Auxiliary to the American Medical Association, has come all the way from Houston, Texas, to be present at her christening, which will take place in the Biltmore Hotel, Wednesday morning, April 18, at ten o'clock."

The Auxiliary, which has been in constant existence since its birth, with approximately 500 members, will celebrate its seventeenth anniversary when it convenes in Pinehurst, May 13, 14, 15, meeting conjointly with the Medical Society of the State of North Carolina.

As the years have passed the Auxiliary has fulfilled in a creditable manner all of Dr. Long's hopes; for she has grown, not only in membership, but in scope of work. Much credit for this growth and expansion should go to the pioneers and former leaders who laid the fundamental structure of organization, projects and programs.

The membership is composed of doctors' wives who pay $1.00 a year membership dues, 50 cents of which goes to McCain Bed, 25 cents to National Auxiliary and 25 cents for State Auxiliary expenses. The fiscal year runs from April to April, and this body meets once a year in conjunction with the Medical Society. There are two Board meetings held, one in the fall with Mrs. McCain at Sanatorium, and one in the Spring, usually at the home of the President.

The Organization is set up with a President; President-Elect; Chairman of Past Presidents; First Vice-President (which is not an elective office, but is filled automatically by the out-going President), who acts as Chairman of Organization; Second Vice-President, who is Chairman of McCain Bed Fund; and Third Vice-President, who is Chairman of the Loan Fund.

The State is divided into ten councillor districts, each with a Chairman. Reports of Councillors are given in the report of Organization Chairman.

During these years the State Auxiliary has been closely affiliated with the National Auxiliary, cooperating with it in its programs and objectives and paying 25 cents for each member of an organized Auxiliary. In return it receives valuable suggestions and pamphlets, and much practical information.

Members of the State Auxiliary are also affiliated with the Southern Medical Association, which keeps at their disposal an excellent library and enables the members to attend their stimulating meetings. The State Auxiliary has also joined with the Southern branch in erecting a memorial to Jane Todd Crawford, heroic Southern woman, who 129 years ago underwent, as an experiment, the first ovariotomy without the aid of an anesthetic.

Doctor's Day, March thirtieth, is observed each year by the State Auxiliary. This too, is a project of the Southern Medical Auxiliary and was inaugurated for the purpose of honoring doctors, both living and dead. This date was chosen because on this date anesthesia was first given to the world.

From time to time notables and distinguished persons have been guests and appeared on State programs. Among these have been: Mrs. C. S. Red of Houston, Texas, National President, at Asheville in 1923; Mrs. A. T. McGowan of Louisville, Ky., President of Southern Medical Auxiliary, at Asheville in 1929 (at which time Mrs. A. B. Holmes of Fairmont was Second Vice-President of the same organization); Mrs. Jackson Freeman, National President, at Winston-Salem in 1933; Mrs. James Blake, National President, and Mrs. Southgate Leigh, President of Southern Medical Auxiliary in 1934; and Mrs. Charles Tomlinson of Omaha, Nebraska, guest in April, 1939, of our President, Mrs. J. A. Elliott, in Charlotte.

The Auxiliary has three major projects. The first is the maintenance of the McCain Bed, a charity bed for tubercular patients, established in 1928, Mrs. R. S. McGeachy, President. Since its establishment the bed has had eleven occupants, including children, young men and women, a doctor and a nurse, all of whom have been restored to health. Our present guest patient is a nurse, daughter of a doctor who was killed while performing his duty.

The Endowment Fund for this bed, the goal being $10,000, was started in 1935 by Mrs. J. B. Sidbury, then State President. Up to date $1,605.59 of this amount has been raised.

The Student Loan Fund, the second project, was created in May, 1930, Mrs. W. B. Murphy, President, to help worthy and needy doctors' children in their junior and senior years at college, or for special work. The goal set for this fund is also $10,000; the amount in the bank April 1, 1940, was $652.52. Up to January, 1940, six loans had been made, and there is at present one pending.

In 1930-31 the Medical Advisory Board (which came into being during 1928-29) and the Auxiliary approved a constructive health program, and another project was added. Circulation of Hygeia, organization of study groups, publishing of health articles in papers, sponsoring of radio programs, cooperation with all health agencies, and endorsement last year (1939) of three bills passed by the General Assembly, are some of the phases of health work carried on by the Auxiliary.

This year has witnessed unusual activity among the Officers and Board members in the fields of education and philanthropy.

Mrs. C. F. Strosnider, President, in the plan for the year's work, 1939-40, adopted the slogan "Be Informed and Inform Others" as to history and objectives of Auxiliary, health laws, and socialized medicine. Under her enthusiastic and capable leadership all departments have done splendid work, as shown by reports; and the year 1939-40 has in every way measured up to all precedents.

Respectfully submitted,
(Mrs. C. F.) ANNA STROSNIDER,
President
(Mrs. Erick) INZA T. BELL,
Historian.

Report of Chairman of Exhibits

Arrangements have been made with Mrs. Beir, National Exhibit Chairman, for the North Carolina Medical Auxiliary 1940 exhibit.

The exhibit this year consists of a poster design in rainbow colors showing the growth and the main projects of the Auxiliary.

Respectfully submitted,
MRS. C. D. THOMAS,
Exhibit Chairman.

Report of Legislative Chairman

On October 5, 1939, Dr. S. D. Craig of Winston-Salem, Dr. W. H. Cobb of Goldsboro and Dr. Hubert Haywood of Raleigh, members of the Advisory Board, were written letters asking them to write short articles on the following subjects:

Dr. Craig was asked to write on "Outstanding Features of our Public Health Program"; Dr. Cobb to write on "The Services Organized Medicine has Rendered the People of North Carolina"; Dr. Haywood to write on "The Constructive Health Legislation Which Was Passed by the 1939 Legislature".

Dr. Craig consented to write a paper, but so far has not been able to do so. Dr. Hubert Haywood, President-Elect of the Medical Society, wrote an article on "The Constructive Health Legislation Which Was Passed by the 1939 Legislature". This article was sent to Mrs. Sidney Smith, Raleigh, for publication.

I regret to report that on account of the ill health of Dr. W. H. Cobb, he cannot write the article requested.

Respectfully submitted,
MRS. HAMILTON W. McKAY,
Legislative Chairman.

Report of Jane Todd Crawford Memorial Chairman

Jane Todd Crawford was the brave woman from Greensburg, Kentucky, on whom Dr. Ephriam McDowell operated for an ovarian tumor on Christmas day in 1809 without an anesthetic. This was the first ovariotomy ever done. December 13, the date Dr. McDowell was first called to see Mrs. Crawford, has been set aside as Jane Todd Crawford Day in Kentucky. The medical profession has honored Dr. McDowell on many occasions. The Auxiliary to the Southern Medical Association is sponsoring the Jane Todd Crawford Memorial, which is to be in the form of a student loan fund for medical students. They are trying to raise $10,000 for this memorial. North Carolina gave $25.00 in 1938. Through the very generous and cooperative response of the entire board and a few sympathetic friends I have raised $50.00 for North Carolina's contribution this year.

Respectfully submitted,
MRS. THOMAS LESLIE LEE.

REPORT OF PRESIDENT

Mrs. C. F. Strosnider

Your president, as president-elect, was on board the Queen of Bermuda May 13, 1939, and made an effort to attend the 10:00 o'clock Executive Meeting and be officially installed, but a slight indisposition sent her scurrying from the meeting to her cabin. So the gavel of authority and rules for the year's work necessarily were handed over to her at a later time, and somewhat less officially; but I trust neither have been the more ill used.

During the summer of 1939, your president filled appointive offices, secured correct addresses of same, and had the official stationery printed; studied the history and needs of the auxiliary, formed plans and policies for the year, and wrote some "contact and courtesy" letters to the Advisory Board and to some of the officers of state and national auxiliaries. It was also in the summer months that outlines were made of the history and duty of each state office and standing committee. These outlines were later filled in by different members of the Executive Board after much study, and called information sheets. Thirty copies of each set of sheets were brought to the Fall Board Meeting and exchanged by the members of the board, to be clipped in loose leaf notebooks:

1. As a help and guide to new officers.
2. To keep up-to-date records of each office.
3. To prevent overlapping or duplication of duties.
4. And to serve as something definite and convenient to pass on to incoming officers.

Because of the need for a legislative chairman and a Jane Todd Crawford Memorial Chairman, said chairmen were nominated and elected by mail in August, 1939, Mrs. Hamilton McKay of Charlotte serving as Legislative Chairman, and Mrs. Thomas Leslie Lee of Kinston as Jane Todd Crawford Chairman for 1939-1940.

As president of the Auxiliary to the Medical Society of the State of North Carolina this past year, I was ever mindful of the fact that I was intrusted with the responsibility of carrying forward the same ideals and high purposes that were born into the organization when it came into being April 18, 1923, in Asheville, with Mrs. P. P. McCain as president. It has been my sincere desire to be guided by these same principles during my administration, interpreting them in the light of modern needs.

Briefly stated, the plans and policies for the State Auxiliary this year were to have an informed and busy auxiliary—getting to work early and keeping diligently at it throughout the year, inspiring interest in the auxiliary and increasing its membership.

To attain these goals, the slogan for the officers has been "Know Your Job and Take Pride in Doing It." The motto has been "Be Informed and Inform Others." That is:

Know the objectives of our auxiliary—they give us noble ends to attain.

Know the history of our organization, which gives us pride in its splendid accomplishments and inspiration for future work.

Know the health laws passed by the 1939 legislature and what is our part in seeing that they are enforced.

Know how to discuss socialized medicine intelligently in informal groups.

Know why the Wagner Bill or its substitute, if made into law, will not be for the best interest of the doctor or public.

Also, the plans were for the president to give all possible help to chairmen. She has made an effort to do this when called upon. However, these calls have not been very frequent, as the officers knew or learned their jobs so thoroughly that they carried on the work without the aid of the president. But the president has given help and suggestions whenever it has been necessary.

Realizing the large opportunity for service for the Auxiliary to the Medical Society of the State of North Carolina, a real effort has been made to increase the membership; the bigger the membership the bigger the job that can be rendered. Therefore, Mrs. Elliott's slogan, "Every Doctor's Wife a Member of Either County or District Auxiliary," was used again this year, and a prize of $5.00 was offered by the president to the district obtaining the largest percentage of dues by May 1, 1940—the money in turn to be presented by the winning district to the McCain Endowment Fund. This honor was won by the Eighth District.

As president of the State Auxiliary, I would so like to say personally to each doctor's wife, "The Auxiliary needs you and you need the Auxiliary." If every doctor's wife knew the aims and ideals of the Auxiliary; if she knew the need for the work the auxiliary is doing; if she knew the worthy people without means that are nursed back to health on the McCain Bed, or the doctor's children who have been aided at college by the Student Loan Fund; if she knew the necessity for being properly informed on socialized medicine, health bills, etc.; if she knew the satisfactory friendships that are formed in auxiliary work, and the good times that are enjoyed at the local and state auxiliary meetings; if she knew how her dollar was needed and spent, I believe every doctor's wife would want to become an auxiliary member.

Among other gifts to encourage the good work of the different departments was $5.00 given by Mrs. R. A. Moore to the auxiliary donating the largest sum to the Student Loan Fund. This was won by Forsyth County. Five dollars was given by Mrs. P. P. McCain to the auxiliary giving the largest amount to the Endowment Fund. This was won by New Hanover County.

The business of the office, I trust, has been properly and promptly attended, and a record of it will be found in the minutes of the meetings of the year. The president's expenses have been itemized, and will be found in the treasurer's report. Only the duties of the office not recorded in the minutes will be given in this report.

The two board meetings, one held October 12, 1939, with Mrs. P. P. McCain and the other held April 12, 1940, at the home of the president in Goldsboro, are fully reported in the minutes of these meetings by Mrs. J. D. Freeman, the very capable secretary of the auxiliary.

The president's office has handled 420 pieces of mail—letters, cards, and packages. This year the president's office handled the bulk of the mail, because of the sorrow which came into the home of the corresponding secretary, Mrs. J. C. Harrell. However, the corresponding secretary has done her duty when called upon, and she always answered with a ready willing smile, "I'll be glad to."

For legitimate and plausible reasons, it became necessary last fall for two officers to resign: Mrs. William Earl Overcash as Hygeia Chairman and Mrs. John C. Tayloe as Councillor for Second District. The auxiliary is very grateful to Mrs. K. B. Pace of Greenville for filling the former vacancy, and Mrs. Graham Ramsey of Washington the latter. Despite the late start, they have both done excellent work.

The travel of the office was 2,140 miles, most of which was on the business of having the Auxiliary Transactions printed. However, a few miles were traveled in the interest of organization.

It was a real pleasure to attend a most enjoyable luncheon on November 2, 1939, in New Bern, given by Mrs. R. S. McGeachy. At this luncheon she organized an auxiliary, the only "child" born unto the state group this year. Mrs. McGeachy is a friend of the auxiliary. She believes in it and what it is doing. She has been a most capable worker for a period of years.

It was my pleasure, also, to attend Ladies' Night of the Third District, December 13, 1939, at Clinton, and say a few words to the doctors about the auxiliary, and then to meet with the local auxiliary afterwards at the home of its president, Mrs. J. S. Ayers, and have a more intimate talk with the ladies.

Hereinafter are recorded some of the articles, reports, and typed material that have been prepared for the auxiliary during 1939-1940.

Besides the information sheets to which reference has been made, a set of questions was prepared concerning the history, aims, objectives, and work of the auxiliary, and answers were written in by Mrs. P. P. McCain. These questions and answers were printed and mailed to members of the board, and also published in the March issue of the North Carolina Medical Journal.

All during the year, your president has jotted down and added to an information sheet started by Mrs. Joseph A. Elliott for the president-elect. This tells what the president is supposed to do and when she should do it, giving as many helpful suggestions as possible. This sheet is filed in the president-elect's note book.

Three messages to councillors were compiled, with the idea of giving them a clear conception of their work and its importance to the success of the auxiliary, and urging them to get to work early. Mrs. Elliott sent one of these messages to the councillors before the fall board meeting and the others in January and March. They gave the plans and policies of the year's work: duties of the councillors in detail; facts to use in their work; what to tell each prospective auxiliary member; a suggested message of invitation to send to eligible doctors' wives; a message from the president and first vice president; and other needed information. It was deemed wise to mention this printed work, hoping it will be helpful year after year.

Mrs. J. A. Elliott, Chairman of Organization, has fulfilled her duty faithfully in keeping in helpful touch with the councillors. The auxiliary in toto is most grateful to her for the fine summary of the councillors' work prepared for the state convention.

As president, it was my privilege to send reports of the work of the North Carolina State Auxiliary to the fall board meetings of the National Medical Auxiliary, which met in Chicago, November 17, 1939, and to the Southern Medical Auxiliary which met in Nashville, Tennessee. Greetings were also sent to each of these meetings—a written one to Southern Medical Association and a telegram to American Medical Association. A report of the 1939-1940 work will be read by your president at the National Meeting in New York, June 10-14.

Upon request of Mrs. J. P. Simonds, an article on our "State Plans and Policies" was prepared for the National Bulletin of the Woman's Auxiliary to the American Medical Association, and appears in the April, 1940, issue; however, it was shortened considerably.

The articles and notices of the auxiliary that have been printed in the North Carolina Medical Journal are as follows:

January issue:
  Complete list of officers for 1939 and 1940.
  "A Message to the Membership of the Auxiliary from Its President"—Mrs. C. F. Strosnider.

February issue:
  "An Appeal to the Doctors from the Auxiliary" —Mrs. C. F. Strosnider.
  "Minutes of the Semi-Annual Meeting of the Board of Directors of the Auxiliary to the Medical Society of the State of North Carolina, Thursday, October 12, 1939"—Mrs. J. D. Freeman.

Editorial Section:
  "A Message to the Medical Society of the State of North Carolina from the Auxiliary Through its President"—Mrs. C. F. Strosnider.
  A response to this message, "The Woman's Auxiliary"—Dr. Wingate Johnson.

March issue:
  "Beginning of the Woman's Auxiliary"—Mrs. J. B. Sidbury.
  "An Examination for Members of the Auxiliary to the Medical Society of the State of North Carolina"
    Questions, Mrs. C. F. Strosnider.
    Answers, Mrs. P. P. McCain.
  Notice of Mrs. J. C. Tayloe's resignation as Second District Councillor, and Mrs. Graham Ramsey's assuming the office. Also notice of the American Medical Association meeting in New York.

April issue:
  "Organization 1938-1939" — Mrs. Joseph A. Elliott.
  Notice of meeting of the American Medical Association.

May issue:
  "A Message From the President"—Mrs. C. F. Strosnider.
  Program of State Convention.
  "Minutes of the spring board meeting, April 12, 1940, in Goldsboro, N. C."—Mrs. J. D. Freeman.

This makes a total of ten articles and four notices written in the Journal.

While discussing reports and printed material of the year, the president would like to pay tribute to the officers of the auxiliary for the way the reports have been written and the very fine wording of the appeals and articles that have been mailed out by the officers of 1939-1940. They show both sincere interest in the work and journalistic ability. It is hoped that a good many of them will be recorded and kept for future reference.

And by way of contrast to the general feeling that "It is useless to write, for letters will not be answered," your president has had prompt replies to her letters from the present board and from auxiliary members at large. For example, in response to a letter to one good worker in an unorganized district, 22 auxiliary members were secured from an eligible membership of 24. So write letters, but write them to interested members.

There are two procedures this year different from former years. One is the way the oral reports are given, and the other is the printing of the transactions of the auxiliary separate from those of the State Medical Society. There are reasons for both. To shorten the state meeting and make it possible to have a visiting speaker, Mrs. J. B. Sidbury moved at the spring board meeting, and Mrs. R. C. McGeachy seconded the motion that "at the annual state meeting brief reports be made by the president, vice presidents representing the projects of the auxiliary, and treasurer. And if district councillors make reports, these be limited to two minutes each." Therefore, the reports are being given to interpret the purpose and work of the office rather than what was done during the year.

As for the auxiliary transactions, it seems that a resolution was passed by the House of Delegates of the State Medical Society in May, 1939, that only the minutes of the House of Delegates and of the Executive Committee would be published. All other matter was to be presented through the State Medical Journal. This information was written to Mrs. J. A. Elliott in July, 1939. In the fall of 1939, the 1940 president was asked to "boil down these 1939 reports to a few columns in the State Medical Journal." To do this meant the loss of the 1939 reports of an excellent year's work, and no permanent records for history. So after frantic correspondence between the past and present presidents of the auxiliary, came reasonable and sane advice from doctor friends of the auxiliary. Then a visit to Dr. Long, Secretary and Treasurer of the Medical Society, and the auxiliary transactions were assured. Five hundred were printed, (the proof reading of which your president assumes responsibility, but begs each author's indulgence as it was her first experience). The auxiliary is deeply grateful to the State Medical Society for this generous favor and help. However, since pamphlets are more easily lost than the bound edition of the transactions, at the spring board meeting it was moved by "Mrs. J. B. Sidbury and seconded by Mrs. R. S. McGeachy, and carried, that the secretary write a letter to the chairman of Publications Committee and to incoming president of the Medical Society to the State of North Carolina requesting that the Transactions carry our roster of officers and chairmen for 1938-1939 as well as for 1939-1940, and that our future records be incorporated in the Transactions, so that the records would be unbroken."

I trust most sincerely that I expressed the sentiments of the auxiliary in "A Message to the Medical Society of the State of North Carolina from the Auxiliary Through Its President", which was printed in the February issue of the State Medical Journal, page 111, and answered by Dr. Johnson. Not only are we proud of our own doctor husbands, but we are proud of the fine profession throughout the state. They are a splendid progressive group doing a noble work unselfishly and faithfully. It is our duty and pleasure to cooperate with them in their undertakings as an organization and encourage their scientific progress as individuals.

The relationship between the State Medical Society and the Auxiliary is most gratifying. The auxiliary always receives most courteous and helpful attention whenever it appeals to the State Medical Society. Not only is the auxiliary grateful to them for printing its yearly reports and the space in the North Carolina Medical Journal, but it is most appreciative of the sum the society gives for the entertainment of the ladies at the State Convention. The auxiliary is always royally entertained, and it is grateful to the Medical Society and the hosts.

The two new projects this year were the establishment of a free bed at Western Sanatorium and an exhibit arranged by Mrs. T. L. Lee of Kinston at the State Convention telling the story of the McCain Bed Fund by the use of a miniature bed with patient and doll nurse, as well as a sanatorium nurse in person to help tell the worthy story and receive any contributions.

To prove that the auxiliary justifies its existence the following facts are offered:

1. During this year the auxiliary was called upon for very definite help by the American Medical Association through Dr. Olin West and Dr. Webb Griffith.
2. One North Carolina doctor wished to organize an auxiliary in his county as the main project of his year's work.
3. Dr. Wingate Johnson's editorial in the February issue of the **North Carolina Medical Journal**, Page 111, in answer to the auxiliary president's message of congratulations to the Medical Society upon establishing the State Medical Journal. "For Mrs. Strosnider's gracious message to the Medical Society of the State of North Carolina, the **North Carolina Medical Journal**, as the official representative of the Society, makes its best bow. We doctors appreciate more than the English language will allow us to say, the loyalty and cooperation of the Woman's Auxiliary. This organization of doctors' wives long ago justified its existence, and richly deserves the space allotted to it in each month's issue of this journal. Indeed, the **North Carolina Medical Journal** belongs to the Woman's Auxiliary as well as to the Medical Society of the State of North Carolina; for the auxiliary is an integral part of the Society."
4. For other specific compliments to the auxiliary as well as definite work commended to it, see Greetings to the Auxiliary by the following presidents of the State Medical Society:
    - Dr. P. P. McCain, 1935 Transactions, Page 462-464.
    - Dr. C. F. Strosnider, 1937 Transactions, Page 573-574.
    - Dr. J. Buren Sidbury, 1939 Auxiliary Transactions, Page 39-40.

The theme or keynote of our mother organization, (National American Medical Association), throughout the year has been progress. Therefore, they wish our report to National to show the progress our state auxiliary is making. To judge the auxiliary's work by one year's accomplishments is not a fair test. Our historians and philosophers tell us that to see progress one must review the conditions and events of the world in spans of a hundred years for a century or more. Our auxiliary is not ancient: however, if we compare its yearly activities with its beginning seventeen years ago this past April, we can see progress, breadth of vision, and widening fields of usefulness.

Some of the many examples of the Auxiliary's growth are:

First, growth in membership: In 1923 the auxiliary was organized with 53 members. In 1933 there were 259 members, while the membership in 1939 was 423, and in 1940 the membership is 605.

Second, growth in purpose: In the beginning the auxiliary was chiefly interested in social activities at the State Convention. Not only are the social activities important now, but two outstanding philanthropies keep the organization interested and busy throughout the year—namely, the free beds that are maintained and the Student Loan Fund.

The first of these beds came into being in 1928 at Sanatorium, and is known as the McCain Bed in honor of Dr. and Mrs. P. P. McCain. It has served to date twelve worthy persons who were without financial aid, at a total cost of $2,395.30.

On May 20, 1938, an endowment fund of $10,000 was started for this bed by Mrs. J. B. Sidbury, which is now $1,745.29.

The other bed at Western Sanatorium was established at the Fall Board Meeting of the Auxiliary, October 12, 1939, and voted by the auxiliary at the State Convention at Pinehurst 1940, the president of the auxiliary giving her expense account of $100.00 to start the fund for this bed.

The Student Loan Fund came into existence in 1930 to serve worthy children of doctors in their junior and senior years at college.

Through 1937 six loans were made. One is pending now and has the approval of two members of the loan committee.

Besides these philanthropies the organization has broadened its work and also enriched itself by being affiliated with the Southern Medical Auxiliary.

Third, growth in Hygeia subscriptions: The subscriptions for Hygeia have grown, as shown by the amount of commissions made available to the McCain Bed Fund:

1934	$ 3.10
1935	11.75
1936	22.75
1937	38.75
1938	35.08
1940	47.10

And for our progressive forward policy, we must give credit to our beloved organizing president, Sadie McBrayer McCain, and the faithful pioneers in this organization who worked along with her. It is the never-failing interest of these mothers of the organization—and their willing helpfulness—that keeps this organization moving forward to richer fields of endeavor. Call upon Sadie McCain for any help or information at any time and she serves promptly and without complaint. This can also be said of some of the other workers in this auxiliary. It is hoped that this spirit of usefulness and service to the doctors of the state and to our respective communities will permeate the entire membership.

The report that has been thus brought to you by your president is the work of the splendid corps of officers of this auxiliary. They have been willing, faithful workers, cooperating wholeheartedly for the best interest of the organization. It has been a real privilege to serve with them, and I hereby give them my sincere thanks for their efficient and splendid work. To our most able treasurer, Mrs. E. C. Judd, the auxiliary is deeply grateful for a big job done nobly—for hers is the most difficult and arduous duty in our organization.

I must also say thank you to another friend of the auxiliary, my husband, Dr. C. F. Strosnider. He has been untiring in his patient advice and help in many ways. He has been most unselfish and generous in lending his secretary for the work of the auxiliary. It is the above two reasons that have made my work this year more of a pleasure than a burden—the capable co-workers who have carried on so splendidly, and my husband who has given so freely of his time and also of his secretary's time.

The following recommendations are submitted for the consideration of the auxiliary:

1. a) That the Advisory Board be active members of the Medical Society, friends of the auxiliary, and willing to give some time and thought to the auxiliary.
    b) That the secretary and treasurer of the State Medical Society always be a member of the Advisory Board.
2. That wise use be made of the auxiliary space in the State Medical Journal.
3. That the organization of doctors' wives be very thorough.
    Reasons:
    a) So that they will be ready for any service needed by the doctors.

b) So that the auxiliary will know what health work, etc., is being done by doctors' wives. As it is, they are doing many fine things, yet the auxiliary gets no credit.

c) So that American Medical Association literature may be distributed.

4. That the $100 for the president's expenses be continued.
5. That the auxiliary have two business sessions instead of one business session at the State Convention.

Respectfully submitted,
ANNA L. STROSNIDER.

PRESENT DAY OPPORTUNITIES OF SERVICE FOR A DOCTOR'S WIFE

Mrs. Charles P. Corn,
President of Southern Medical Auxiliary
Greenville, S. C.

In thinking of the present day opportunities for service for a doctor's wife, I am reminded of a remark which Dr. Rock Sleyster, President of the American Medical Association, made in his address to the National Auxiliary in St. Louis, Missouri, last May. He said "No single influence helps a doctor so much as his wife and his home. Here she may create a comfortable and congenial atmosphere, nourishing not only the physical needs of her physician husband and her family, but also their mental and spiritual requirements." So we agree with Dr. Sleyster that the first and foremost opportunity for service is in the home, sharing his life dedicated to the professional call. We realize she must be a person of idealism and altruistic aspirations, else she would not have married a doctor — for the practice of medicine grew out of a sympathy for humanity and a desire to relieve suffering and distress.

The doctor's wife is to her husband as Longfellow's Minnehaha to Hiawatha:

"As unto the bow the cord is,
"So unto man is woman.
"Though she bends him, she obeys him,
"Though she draws him, yet she follows
"Useless each without the other."

The true doctor's wife, like the faithful physician himself, will never be a slacker, and her greatest opportunity for service, outside her home, is in working shoulder to shoulder with her husband in his altruistic efforts to eradicate disease and, in so doing, add happiness and prosperity to all those about her.

Secondly, one of the greatest privileges and opportunities for service to the doctor's wife comes through the Woman's Auxiliary by creating and maintaining healthy contacts between the public and the medical profession. The auxiliaries are the doorways into lay groups. Women's organizations are knocking at the doorways and asking for guidance. The medical profession has an opportunity to enter and be the instructor, the guides. Communities and individuals are health-conscious and wish information. I heard some one say the other day that a girl from birth to the age of fourteen needed her mother. From the ages of fourteen to forty she needed beauty; from forty to sixty she needed personality, and from sixty on, she needed money. This is all true, and well she might have added that she needed good health always.

If asked to be chairman of a health program in your club, gladly accept this, for it is an opportunity to help plan a wise and sane program which suits your community. If every doctor's wife would sponsor one worth-while authenic health program each year, our foundation would be a substantial one. Stress, or sponsor, if necessary, periodic health examinations for school children, or prenatal work, or the summer round-ups.

For the adults, too much stress cannot be made on health examinations, for in this hurry-scurry of life, they do not take time to have a physical examination. Statistics show that one out of every six applications for life insurance is declined or postponed. Get the disease before it gets you. One does not want to be like the man who—

"To get his wealth
"He spent his health,
"And then mid might and main
"He turned around,
"And spent his wealth
"To get his health again."

With agitation for socialized medicine, it behooves us as doctor's wives to give watchful assistance in any plans to keep the profession secure. Familiarize yourself with the facts regarding socialized medicine, so as to be able to converse with people on this subject when there is need for it. Let us keep abreast of the times and be worth-while citizens to make the world a better place in which to live.

The Chairman of Legislation in the National Auxiliary has asked each doctor's wife to be a registered voter. We should assume this responsibility as citizens, because democracy can function only when all the citizens vote intelligently. At this time everything that enters into our lives, schools, homes and jobs, comes under the jurisdiction of some governmental agency. What they do in the City Hall, the State House, and the Capitol at Washington has a bearing on our plans for our children and ourselves. Banded together, our combined strength may be able to accomplish much. So I hope we shall feel that another of our opportunities for service is to be a registered citizen in 1940.

Another opportunity for service that we do not want to overlook is that we as women, and mothers of the race, can do much to forward peace in this world which is war-torn in so many countries. I quote from an editorial in "The Critic" in the New Statesman and Nation, London, which says: "Here is a thought provoking question from deepest Africa. An English missionary in a chat with an old negro cannibal of the tribe of Niam-Niam, told him of the enormous number of victims of the World War. 'How could you eat so much human meat?' questioned the cannibal. 'We whites do not eat human beings,' answered the missionary. 'Well, then, what do you kill them for?' asked the cannibal in great astonishment."

As members of the Southern Medical Association, our opportunities are again before us in continuing to uphold our two main objectives that we sponsor. These you are familiar with, but I shall mention them briefly, The Research and Romance of Medicine, and The Jane Todd Crawford Memorial.

In the work of Research and Romance of Medicine, all good medical and historical papers given in the various auxiliaries of the seventeen states comprising the Southern Medical Auxiliary are sent in each year and filed, making what is known as "The Southern Auxiliary Lending Library." Any member is privileged to borrow any of those articles for program material at any time. A list is kept on file of the papers on hand and the ones loaned out. Last year 147 papers and clippings were mailed out to 37 auxiliaries in 11 of the states. This has proven to be one of the most helpful features of our Southern Auxiliary work. Mrs. Leslie Moore, 4204 Beverly Drive, Dallas, Texas, is Chairman of this work.

The Southern Medical Auxiliary has long been working toward a fitting memorial for the brave woman, Jane Todd Crawford, who in 1809 submitted to the first ovariotomy without an anesthetic.

There is $1,169.73 in the J. T. C. fund in the Southern Medical Auxiliary Treasury now, and a committee is functioning to decide on some form of memorial for this pioneer heroine of surgery. $1,000.00 of this amount in the Treasury was contributed in Kentucky two years ago. I trust that each state in our southland will see fit to give a small amount this year toward this Southern Auxiliary memorial. Mrs. Luther Boch of Bellevue, Kentucky, is Chairman of this work.

Lastly, we do not want to neglect our social part, for friendship is the basis on which our Auxiliary was founded. There is nothing sweeter than the communion of friend with friend. The joy that is created by the companionship of those of like ideals and ambitions creates an atmosphere that lingers in the heart like sweet perfume. Some one has asked, "What is fellowship?", and the best definition was "Two fellows on the same ship"—that's fellowship.

Edwin Markham has said:

"There is a destiny
"That makes us brothers;
"None goes his way alone
"All that we send into the lives of others
"Comes back into our own."

So we, as doctors' wives find our opportunities for services in our present times many and varied. May we feel that although individually we can accomplish little, we can pool our efforts in the interest of efficiency and that in the end our assets will outweigh our liabilities, and that although we have given much, we too, have received.

In closing, I am borrowing the following recipe for a club sandwich, which I think will also be appropriate for our Auxiliary Members, only I shall call it an Auxiliary sandwich:

Take 2 ounces of Jollity; 1 large package of Unity; 3 cups of Neighborliness; 2½ heaping tablespoons of Interest; 2 pinches of Originality; 1 cup of Reasoning (sifted 3 times); and a portion of Sincerity.

Directions:

Mix Jollity, Unity and Neighborliness well in a large bowl. Add Interest steadily, but not too slowly. When the batter gets smooth and shiny, dash in the Originality. Next, add evenly the Reasoning (Be sure to sift 3 times). Then make the sandwiches. But, before serving, garnish with a generous amount of Sincerity. Try it and see how it works.

THE COURTESY COMMITTEE

The Courtesy Committee, in behalf of the Woman's Auxiliary to the Medical Society of the State of North Carolina, wishes to express sincere appreciation for the many courtesies extended our members during this annual meeting.

We wish to thank especially the Moore County and the Hoke County Auxiliaries for the delightful entertainment provided—namely, the lovely tea held at the Moore County Hospital, the Keno party in the Pine Room, the bridge party, and the drive to the orchid farm and to many other beautiful places.

We wish also to thank the management of the Carolina Theater.

The hospitality of Moore County has been put to the test so many times in providing entertainment at the annual meetings that we feel the truth of the old adage, "Practice Makes Perfect"; for everything has been done to make this the perfect meeting.

Respectfully submitted,
MRS. WINGATE JOHNSON
MRS. A. H. ELLIOTT
MRS. K. B. PACE

ROSTER OF MEMBERS

1939-1940

Mrs. Adams, C. N., Winston-Salem
Mrs. Aden, O. L., Winston-Salem
Mrs. Alexander, G. T., Thomasville
Mrs. Alexander, J. R.....Charlotte
Mrs. Allan, William........Charlotte
Mrs. Anders, McT. G.......Gastonia
Mrs. Anderson, E. C., Wilmington
Mrs. Anderson, Wade........Wilson
Mrs. Andrew, J. M.......Lexington
Mrs. Ashford, Chas. H., New Bern
Mrs. Austin, F. D., Jr.....Charlotte
Mrs. Austin, F. D., Sr...Charlotte
Mrs. Avery, E. S...Winston-Salem
Mrs. Ayers, J. S..................Clinton
Mrs. Baker, C. S...........New Bern
Mrs. Barbee, G. S..............Zebulon
Mrs. Barefoot, E. C., Wilmington
Mrs. Barefoot, Graham B. Wilmington
Mrs. Barnes, Dempsey..Asheboro
Mrs. Barnes, J. T............Asheboro
Mrs. Barnes, Tiffany......Asheboro
Mrs. Barrett, J. M.........Greenville
Mrs. Barron, A. A.........Charlotte
Mrs. Basnight, T. C..............Stokes
Mrs. Baxter, O. D...........Charlotte
Mrs. Beam, Hugh..............Roxboro
Mrs. Beard, G. C.............Atkinson
Mrs. Beasley, E. B.........Fountain
Mrs. Beckwith, R. P. Roanoke Rapids
Mrs. Bell, G. E...................Wilson
Mrs. Benbow, E. V. Winston-Salem
Mrs. Bender, John....Red Springs
Mrs. Bender, J. R.........Lexington
Mrs. Benson, N. O.......Lumberton
Mrs. Benton, G. R..........Fremont
Mrs. Benton, Wayne...Jamestown
Mrs. Berryhill, W. Reece Chapel Hill
Mrs. Billings, G. M.....Morganton
Mrs. Bittinger, S. M. Black Mountain
Mrs. Bizzell, Edward....Goldsboro
Mrs. Bizzell, Malcolm....Goldsboro
Mrs. Black, Paul A. L. Wilmington
Mrs. Blackshear, T. J.........Wilson
Mrs. Blackwelder, Verne H. Lenoir
Mrs. Blair, Andrew.......Charlotte
Mrs. Blalock, B. K.........Charlotte
Mrs. Block, M. E...........Lexington
Mrs. Boney, Elwood..........Kinston
Mrs. Bowers, M. A. Winston-Salem
Mrs. Bowman, E. L.... Lumberton
Mrs. Bowman, H. E.......Aberdeen
Mrs. Bradford, George E. Winston-Salem
Mrs. Bradford, W. B.....Charlotte
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Mrs. Bridgers, D. H...Bladenboro
Mrs. Britt, C. S..............Charlotte
Mrs. Britt, J. N.............Lumberton
Mrs. Britt, Vara............Smithfield
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Mrs. Brooks, F. B....... Greenville
Mrs. Brooks, R. E.........Burlington
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Mrs. Brown, G. W.............Raeford
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Mrs. Bulla, A. C..................Raleigh
Mrs. Bullock, Douglas....Rowland
Mrs. Bulluck, Douglas....Rowland
Mrs. Burwell, J. C...... Greensboro
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Miss Byerly, Victoria....Cooleemee
Mrs. Byerley, W. G.............Lenoir
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Mrs. Carmichael, T. W...Rowland

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Mrs. Carter, Bayard Durham
Mrs. Casteen, Kenan Leaksville
Mrs. Cathell, E. J. Lexington
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Mrs. Cooper, Derwin Durham
Mrs. Cooper, G. M. Raleigh
Mrs. Coppridge, W. M. Durham
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Mrs. Corpening, O. J. Granite Falls
Mrs. Couch, V. F. Winston-Salem
Mrs. Covington, M. M. C. Roanoke Rapids
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Mrs. Cramer, John B. Wilmington
Mrs. Craig, S. Douglas Winston-Salem
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Mrs. Craven, F. C. Asheboro
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Mrs. Crumpler, P. L. Clinton
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Mrs. Dalton, W. N. Winston-Salem
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Mrs. Daniels, R. L. New Bern
Mrs. Davie, T. M. Canton
Mrs. Davis, C. B. Wilmington
Mrs. Davis, John P. Winston-Salem
Mrs. Davis, Phillip B. High Point
Mrs. Davis, R. B. Greensboro
Mrs. Dees, Rigdon Greensboro
Mrs. DeLaney, Chas. O. Winston-Salem
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Mrs. Dosher, William Southport
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Mrs. Duffy, Richard New Bern
Mrs. Dula, Fred Lenoir
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Mrs. Elliott, Joseph A. Charlotte
Mrs. Elliott, W. M. Forest City
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Mrs. Evans, John E. Wilmington
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Mrs. Farrington, R. K. Thomasville
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Mrs. Farthing, L. W. Wilmington
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Mrs. Fergus, Roy Southport
Mrs. Ferguson, Robert Charlotte
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Mrs. Fritz, J. L. Asheboro
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Mrs. Garrison, R. B. Hamlet
Mrs. Garvey, Fred Winston-Salem
Mrs. Garvey, R. R. Winston-Salem
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Mrs. Godwin, G. C. Sanatorium
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Mrs. Goswick, H. W. Winston-Salem
Mrs. Graham, Benjamin Wilmington
Mrs. Graham, Charles P. Wilmington
Mrs. Gray, C. L. Sanatorium
Mrs. Grayson, C. S. High Point
Mrs. Green, T. M. Wilmington
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Mrs. Griffin, H. W. Hickory
Mrs. Griffis, J. W. Denton
Mrs. Grimes, W. L. Winston-Salem
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Mrs. Hamer, A. W. Morganton
Mrs. Hamilton, John N. Raleigh
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Mrs. Harden, Graham Burlington
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Mrs. Harding, S. C. Mocksville
Mrs. Harmon, R. H. Boone
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Mrs. Harriss, Andrew H. Wilmington
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Mrs. Hart, V. K. Charlotte
Mrs. Harves, Auberey Charlotte
Mrs. Harvey, J. N. High Point
Mrs. Harville, J. A. Winston-Salem
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Mrs. Hayne, J. A. Pikeville
Mrs. Haywood, Hubert R. Raleigh
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Mrs. Hedrick, Clyde R. Lenoir
Mrs. Hege, J. Roy Winston-Salem
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Mrs. Helsabeck, B. A. Winston-Salem
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Mrs. Herring, Edward Raleigh
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Mrs. Hightower, Felda Raleigh
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Mrs. Hipp, Edward R. Charlotte
Mrs. Hitch, Joseph Raleigh
Mrs. Hochinson, S. S. Bladenboro
Mrs. Hocutt, B. A. Clayton
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Mrs. Hollister, William New Bern
Mrs. Hollyday, W. M. Asheville
Mrs. Homes, A. B. Fairmont
Mrs. Holmes, George Wilmington
Mrs. Holt, W. P. Erwin
Mrs. Homer, Douglas Lenoir
Mrs. Hooker, John S. Chapel Hill
Mrs. Hooper, John T. Wilmington
Mrs. Houser, F. M. Cherryville
Mrs. Hovis, L. W. Charlotte
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Mrs. Hubbard, F. C. North Wilkesboro
Mrs. Hudgins, H. A. Winston-Salem
Mrs. Hudson, C. C. Greensboro
Mrs. Hunt, J. F. Spindale
Mrs. Hunt, Jasper S. Charlotte
Mrs. Hunt, W. B. Lexington
Mrs. Hunter, W. C. Wilson
Mrs. Hurdle, S. W. Winston-Salem
Mrs. Irwin, Henderson Eureka
Mrs. Ivey, H. B. Goldsboro
Mrs. Izlar, H. L. Winston-Salem
Mrs. Jackson, W. L. High Point
Mrs. Jacobs, J. E. Charlotte
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Mrs. Jennings, C. W. Greensboro
Mrs. Jennings, R. G. Thomasville
Mrs. Johnson, A. N. Garland
Mrs. Johnson, C. L. Red Springs
Mrs. Johnson, George Wilmington
Mrs. Johnson, Harry Greensboro
Mrs. Johnson, J. R. Ramseur
Mrs. Johnson, W. C. Canton

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Mrs. Johnston, W. W.........Manteo
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Mrs. Jones, R. D.............New Bern
Mrs. Jones, R. Rives
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Mrs. Judd, James M...........Varina
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Mrs. Kafer, Oscar A.....New Bern
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Mrs. Keiger, O. R...Winston-Salem
Mrs. Keiter, W. E.............Kinston
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Mrs. Kibler, W. H.........Morganton
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Mrs. Lee, Myke.....................Kinston
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Mrs. Lewis, J. S.................Hickory
Mrs. Lohr, Dermot........Lexington
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Mrs. Long, Ira C...........Goldsboro
Mrs. Long, Glenn................Newton
Mrs. Long, R. H.
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Mrs. Long, T. W.................Newton
Mrs. Long, T. W. M.
Roanoke Rapids
Mrs. Long, V. M.....Winston-Salem
Mrs. Lore, Ralph..................Lenoir
Mrs. Love, B. E.................Roxboro
Mrs. Lovelace, J. C.........Henrietta
Mrs. Lowery, J. R...........Salisbury
Mrs. Lyda, R. O.............Greensboro
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Mrs. McAllister, Hugh
Lumberton
Mrs. McCain, P. P.......Sanatorium
Mrs. McCain, W. K.....High Point

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Mrs. McCuiston, A. M.
Mount Olive
Mrs. McDonald, A. M.....Charlotte
Mrs. McDonald, R. L...Thomasville
Mrs. McFayden, O. L.
Fayetteville
Mrs. McGeachy, R. S.....New Bern
Mrs. McGee, J. W.............Raleigh
Mrs. McGee, Robert...........Raleigh
Mrs. McIntyre, Stephen
Lumberton
Mrs. McKay, Hamilton..Charlotte
Mrs. McKay, Robert........Charlotte
Mrs. McKee, John S.
Morganton, State Hospital
Mrs. McKee, Lewis Middleton
Durham
Mrs. McLean, Allen
Morganton, State Hospital
Mrs. McLeod, N. H., Jr.....Raleigh
Mrs. McLoughlin, C. S., Sr.
Charlotte
Mrs. McMillan, E. A.
Winston-Salem
Mrs. McMillan, R. L.
Winston-Salem
Mrs. McMillan, Roscoe
Red Springs
Mrs. McNeill, J. H.
North Wilkesboro
Mrs. McPhail, L. D.........Charlotte
Mrs. McPheeters, S. B.
Goldsboro
Mrs. McPherson, Chas. W.
Burlington
Mrs. McRae, C. F.........Morganton
Mrs. Maddrey, M. C.
Roanoke Rapids
Mrs. Maness, A. K...... Greensboro
Mrs. Manning, Isaac....Chapel Hill
Mrs. Marshall, James F.
Winston-Salem
Mrs. Martin, J. A.........Lumberton
Mrs. Martin, W. Francis
Charlotte
Mrs. Massey, Alonzo......Charlotte
Mrs. Matherson, R. A........Raeford
Mrs. Matthews, Vann... Charlotte
Mrs. Mattison, W. L.......Asheboro
Mrs. May, Wm. P.
Winston-Salem
Mrs. Mebane, Wm. C.
Wilmington
Mrs. Merritt, Fred........Greensboro
Mrs. Merritt, J. H.........Woodsdale
Mrs. Milham, C. G.............Hamlet
Mrs. Miller, O. L.............Charlotte
Mrs. Miller, R. B...........Goldsboro
Mrs. Miller, R. C.............Gastonia
Mrs. Mitchell, G. T.....Wilkesboro
Mrs. Mitchell, Geo. W.........Wilson
Mrs. Mitchener, J. S.........Raleigh
Mrs. Mock, F. L.............Lexington
Mrs. Moore, R. A...Winston-Salem
Mrs. Moore, W. Houston
Wilmington
Mrs. Moore, Julian..........Asheville
Mrs. Morris, J. W.
North Wilkesboro
Mrs. Mullen, M. P...............Wilson
Mrs. Munt, H. F.....Winston-Salem
Mrs. Murchison, David R.
Wilmington

Mrs. Murry, R. L...........Raeford
Mrs. Myers, Alonzo........Charlotte
Mrs. Nalle, B. C...............Charlotte
Mrs. Nance, C. L.............Charlotte
Mrs. Naumoff, Philip......Charlotte
Mrs. Neblett, H. C...........Charlotte
Mrs. Neel, R. Nelson.............Lenoir
Mrs. Nelson, W. H.............Clinton
Mrs. Nesbitt, Chas. T.
Wilmington
Mrs. Neville, C. H...Scotland Neck
Mrs. Newell, L. B...........Charlotte
Mrs. Newton, W. K.
North Wilkesboro
Mrs. Nichols, A. F.............Roxboro
Mrs. Nicholson, B. M.........Enfield
Mrs. Nobles, J. E.........Greenville
Mrs. Nowell, S. C.............Hickory
Mrs. Obriant, A. L.............Raeford
Mrs. Oehlbeck, Luther......Kinston
Mrs. Offelt, Vernon.............Kinston
Mrs. Ogburn, H. H.......Greensboro
Mrs. Ogburn, L. C.
Winston-Salem
Mrs. Ormand, A. L.
Black Mountain
Mrs. Overcash, W. Earl
Southern Pines
Mrs. Ownbey, A. D.......Greensboro
Mrs. Pace, K. B.............Greenville
Mrs. Palmer, Horace.. Lillington
Mrs. Palmer, Yates S....... Valdese
Mrs. Parker, O. P...............Clinton
Mrs. Parrott, Mercer.........Kinston
Mrs. Pate, J. Frank............Canton
Mrs. Patterson, J. F.....New Bern
Mrs. Peeler, C. N...........Charlotte
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Mrs. Perry, V. P...............Kinston
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Washington
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Mrs. Phillips, E. N.....Wilkesboro
Mrs. Pittman, M. A.............Wilson
Mrs. Pittman, R. L.....Fayetteville
Mrs. Pollock, Raymond..New Bern
Mrs. Pool, B. B.....Winston-Salem
Mrs. Poole, Glenn..Winston-Salem
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Mrs. Procter, I. M.............Raleigh
Mrs. Pugh, C. H...............Gastonia
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Mrs. Ramsey, Graham
Washington
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Mrs. Ransom, J. Lester..Charlotte
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Mrs. Riddle, J. D...........Morganton
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Mrs. Roberts, Bryan, N.
Hillsboro
Mrs. Robertson, C. B.........Jackson

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Mrs. Robinson, D. E.....Burlington
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Mrs. Rosenbaum, M. M. Shallotte
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Mrs. Royal, D. A...........Salemburg
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Mrs. Selby, W. E............ Charlotte
Mrs. Sessoms, E. Tate.. Roseboro
Mrs. Sharpe, C. R........ Lexington
Mrs. Sharpe, Frank A. Greensboro
Mrs. Shaw, J. A........ Fayetteville
Mrs. Shelburn, P. A.....Greensboro
Mrs. Shephard, Carl....High Point
Mrs. Sherrill, H. R...........Shelby
Mrs. Sherrill, P. M.....Thomasville
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Mrs. Sigman F. G.. .....Spencer
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Mrs. Sink, Rex..... Winston-Salem
Mrs. Sisk, C. N...........Waynesville
Mrs. Skeen, Leo B.....Sanatorium
Mrs. Slate, J. E...... High Point
Mrs. Slate, M. L....... High Point
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Mrs. Sloan, Henry .Charlotte
Mrs. Sloan, W. M.............Garland
Mrs. Slocum, Annie Hill Wilmington
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Mrs. Smith, J. A..........Lexington
Mrs. Smith, J. E..............Windsor
Mrs. Smith, J. McN.........Rowland
Mrs. Smith, M. B............Ramseur
Mrs. Smith, O. F...Scotland Neck
Mrs. Smith, Sidney......... Raleigh
Mrs. Smith, W. G.......Thomasville
Mrs. Smith, W. H.........Goldsboro
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Mrs. Speas, W. P...Winston-Salem
Mrs. Spicer, R. W. Winston-Salem
Mrs. Spicer, William....Goldsboro
Mrs. Sprunt. W. H. Winston-Salem
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Mrs. Stanton, T. M.....High Point
Mrs. Starling, W. P.........Roseboro
Mrs. Stenhouse, H. M...Goldsboro
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Mrs. Stewart, D. N., Jr.... Hickory
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Mrs. Strickland, Ernest L. Wilson
Mrs. Strickland, Millard. Raleigh
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Mrs. Symington, John......Carthage
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Mrs. Sykes, R. P.............Asheboro
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Mrs. Taylor, F. R..... High Point
Mrs. Taylor, T. J. Roanoke Rapids
Mrs. Taylor, W. T.............Burgaw
Mrs. Taylor, Wesley....Greensboro
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Mrs. Terry J. R............Lexington
Mrs. Tew, Cloyce.............. Raleigh
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Mrs. Thompson, Joseph Creedmore
Mrs. Thompson, Raymond Charlotte
Mrs. Tice, W. T........ High Point
Mrs. Todd, L. C.............Charlotte
Mrs. Troutman, B. S......... Lenoir
Mrs. Tuttle, R. G. Winston-Salem
Mrs. Tyndall, Glenn...........Kinston
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Mrs. Umphlet, T. L...........Raleigh
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Mrs. Vermilya, G. D.........Hickory
Mrs. Vernon, J. W.........Morganton
Mrs. Vestal, W. J..........Lexington
Mrs. Wadsworth, Harvey B. New Bern
Mrs. Walker, H. D...Elizabeth City
Mrs. Walker, L. D..........Charlotte
Mrs. Wall, Roger I.......... Raleigh
Mrs. Wall, R. L... Winston-Salem
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Mrs. Ward, W. T.................Raleigh
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Mrs. Watkins, F. B. Morganton, State Hospital
Mrs. Watson, T. M.......Greenville
Mrs. Weather, Bahnson Roanoke Rapids
Mrs. Welton, David..........Charlotte
Mrs. Wessell, John C...Wilmington
Mrs. West, B. C............... Kinston
Mrs. West, C. F.................Kinston
Mrs. Westmoreland, J. R...Canton
Mrs. Whaley, J. D.............Hickory
Mrs. Whicker, G. L.....Kannapolis
Mrs. Whisonant, A. M.....Charlotte
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Mrs. White, Preston.........Charlotte
Mrs. White, R. A..............Asheville
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Mrs. Wilkins, R. B............Durham
Mrs. Williams, Chas. F.....Raleigh
Mrs. Williams, J. H.............Clinton
Mrs. Willis, C. V...........Vanceboro
Mrs. Willis, H. C.................Wilson
Mrs. Wilson, C. L.................Lenoir
Mrs. Wilson, Frank............Raleigh
Mrs. Winkler, Harry..... Charlotte
Mrs. Wiseman, P. H.......Avondale
Mrs. Wishart, W. E.........Charlotte
Mrs. Wolf, Hugh..........Greensboro
Mrs. Wood, Edward J. Wilmington
Mrs. Woodard, A. G.......Goldsboro
Mrs. Woodard, C. A..............Wilson
Mrs. Woodruff, T. C...High Point
Mrs. Wooten, F. P.............Kinston
Mrs. Wooten, W. I.........Greenville
Mrs. Wright, John B.........Raleigh
Mrs. Yarborough, Frank.......Cary
Mrs. Yoder, Paul... Winston-Salem
Mrs. Young, R. F.................Weldon
Mrs. Zimmermann, R. U...Welcome

WOMAN'S AUXILIARY

REPORT OF MEETING OF THE WOMAN'S AUXILIARY TO THE AMERICAN MEDICAL ASSOCIATION

New York, June 10-14

The Woman's Auxiliary to the A. M. A. met in New York, June 10-14, 1940. For many months the members of the New York State Auxiliary had been looking forward to extending a friendly welcome to the guests of this Eighteenth Annual Session. Mr. Newbold Morris, President of the New York City Council, extended the official welcome at the opening meeting.

The entertainment committee arranged a diversified program of entertainment, giving the guests inspiration, thrills and fun. New York's multiple and varied attractions made it desirable to deviate from the customary routine sightseeing and evolve a program of choice. Guests were furnished a strip of tickets which could be used any time during the week, but the general sessions and social functions were so interesting that no one could afford to miss them.

Mrs. Rollo K. Packard of Chicago presided at the business sessions. Her report, and those of all the other officers and standing committees showed that each had spent a very busy year and had accomplished much for the Auxiliary. The general theme of all the meetings was "preparedness and our readiness to respond to any National Movement as no other organization."

I should like to give a detailed report of the meeting, but that would consume too much space. However, I do consider that one of the most important actions which took place was the budgeting of a certain sum for each officer to be used in carrying out her particular duties.

There were 552 registered at the convention, including delegates, alternates, and guests. This was a small number considering the number of wives who went to New York at the time. I was proud of our representation from North Carolina. We enjoyed a program of entertainment features which will leave a lasting impression.

Respectfully submitted,
MRS. BEN H. KENDALL.

ANNOUNCEMENTS

Our President-Elect, Mrs. Sidney Smith, is compiling a list of all the wives of doctors in North Carolina. This information is greatly needed and will be a wonderful help in our work. We appreciate the cooperation of the secretaries of the County Societies in helping her in this good work.

Mrs. F. M. Houser, Cherryville, has tendered her resignation as second Vice-President, Chairman of McCain Bed Fund. This necessitates the nomination and election of her successor by the Executive Committee.

BOOK REVIEWS

Clinical Diabetes Mellitus and Hyperinsulinism: By Russell M. Wilder, M. D., Ph.D., F.A.C.P. Professor and Chief of the Department of Medicine, The Mayo Foundation for Medical Education and Research University of Minnesota; Head of the Section on Metabolism Therapy, Division of Medicine, The Mayo Clinic, Rochester, Minnesota. 459 pages with 19 illustrations. Philadelphia and London: W. B. Saunders Company, 1940. Cloth, $6.00.

For twenty-five years Dr. Wilder has given most of his professional life to the study of diabetes, and in this book he makes available to the practitioner the fruits of his labor. It is so well written that it is a pleasure to read, and is comprehensive without unnecessary detail. Every phase of diabetes that concerns the practitioner is covered clearly and practically. The section on hyperinsulinism is well done and brings up to date the information available on this most interesting condition, "the clinical opposite of diabetes". A sharp distinction is drawn between true hyperinsulinism, which is due to a tumor or hypertrophy of the islands of Langerhans, and hypoglycemia associated with neurosis. The former requires removal of a large part of the pancreas; the latter is treated by diet and other less heroic measures.

As I Remember Him. The Biography of R. S. By Hans Zinsser, M.D. Price $2.50. Pp. 443. Boston: Little, Brown and Company, 1940.

This book—the July selection of the Book-of-the-Month Club—first appeared in serial form in the Atlantic Monthly. Those who revelled in the piquant style of Rats, Lice and History, by the same author, will not be disappointed in this offering from the pen of the distinguished Professor of Bacteriology in the Harvard School of Medicine. Although ostensibly written as the biography of an intimate friend, it is really a thinly disguised autobiography —or rather a collection of travelogues and essays setting forth Dr. Zinsser's views on various subjects: religion, medicine, science, education, war, politics, literature, art, and the ideologies of various countries in which he has lived. These observations are flavored with the shrewd, tolerant, slightly cynical viewpoint of a philosophical scientist, a veteran of the first World War now thoroughly disillusioned by the second. The book is not only entertaining; it is a storehouse of information, and studded with quotable passages that the reader will want to remember.

Manual of Peripheral Vascular Disorders. By David W. Kramer, M.D., F.A.C.P., Assistant Professor of Medicine, Jefferson Medical College; Chief Clinical Assistant of Vascular Clinic, Jefferson Hospital; and Consultant on Peripheral Vascular Disorders, Philadelphia General Hospital. Price $6.00. Pp. 448. Philadelphia: The Blakiston Company, 1940.

This is perhaps the most complete book yet published on the increasingly important subject of peripheral vascular disease. Every phase of the subject is considered in detail, with full discussion of etiology, symptoms and clinical course, diagnosis and treatment. The methods that have been tested and proved by the author are given most prominence. In reading the book straight through, one finds a great deal of repetition; but this makes it more valuable as a reference work. It is divided into four parts: I, Symptoms, Signs and Tests; II, Occlusive (or organic) Vascular Disorders; III, Vasospastic and Vasodilator (or functional) Disorders; IV, Gangrene and Disorders of the Veins.

This work can be recommended unreservedly to practitioners who want to bring up to date their knowledge of peripheral vascular disease.

Getting Ready to be a Mother. By Carolyn C. Van Blarcom. Revised by Hazel Corbin. Price $2.50. New York: The Macmillan Company, 1940.

The fact that this book has gone through four editions proves that women are interested in preparedness for motherhood, and this volume, written by a nurse, contains many attractive illustrations on the growth and development of the foetus, delivery of the child, and the technique of infant care. The chapter on bathing and dressing the baby is particularly good, and should be helpful to the young mother. For the intelligent mother, for nurses, and for social service workers who do not object to sentimentality this book may be useful, but for the average expectant mother it may create apprehension and misunderstanding in spite of the sugar coating.

Many suggestions given about expressing breast milk, training the baby to use the toilet, use of a soap stick, etc., may not meet the approval of most obstetricians and pediatricians. Finally, more valuable handbooks to supplement the doctor's instructions may be purchased for half the price.

Disease and Chemotherapy. — Disease is one of the most dreaded foes of mankind. To conquer it is one of the chief aims of science. Chemistry and biology, in particular, are jointly charged with the responsibility for seeking knowledge about the diseases which menace man's health and jeopardize his life. While much progress has been made in the study of the agents causing disease, little is yet known about the exact way the causative agent works and the changes brought about in the physical and chemical activities of the cells of the tissues and organs. Also little is yet known about the nature of the chemical defense weapons of the body or how drugs act on bacteria and other infecting agents. The knowledge of chemotherapy is still highly empirical.—M. L. Crossley: Recent Advances in Chemotherapy, Science, 91:370 (April 19) 1940.

Electrocardiography. By Chauncey C. Maher, B.S., M.D., Assistant Professor of Medicine, Northwestern University and the Montgomery Ward Medical Clinics; Attending Internist and Chairman of Department of Medicine, at the Cook County Hospital, Chicago; and Paul H. Wosika, M.D., M.S., Instructor in Medicine, Northwestern University and the Montgomery Ward Medical Clinics; Attending Physician at Passavant Memorial Hospital; Associate in Medicine at the Cook County Hospital, Chicago. Price, $4.00. Pp. 334. Third Edition. Baltimore: Williams and Wilkins Company, 1940.

While the electrocardiograph should never be allowed to take the place of a careful history and an equally careful physical examination in diagnosing heart conditions, it is a valuable aid. Furthermore, its use has become so nearly universal that it behooves every medical man who aspires to keep abreast of the medical times to learn something about the fundamentals of electrocardiography, whether he owns a machine or not. For the older practitioners whose medical school days antedated this science, this book offers as clear an explanation of it as can be made. For younger men, already familiar with its terminology, it brings up to the minute the accumulated knowledge of the subject, including a comprehensive discussion of the fourth lead. One hundred electrocardiograms illustrate the various types of heart conditions and correlate them with clinical findings.

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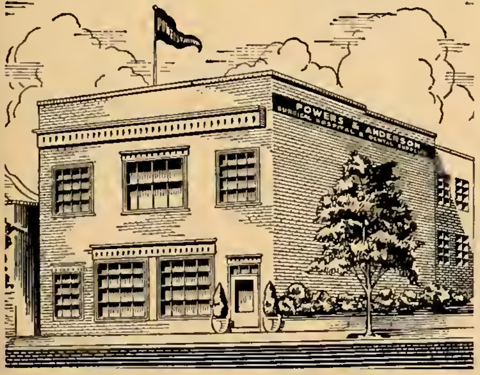

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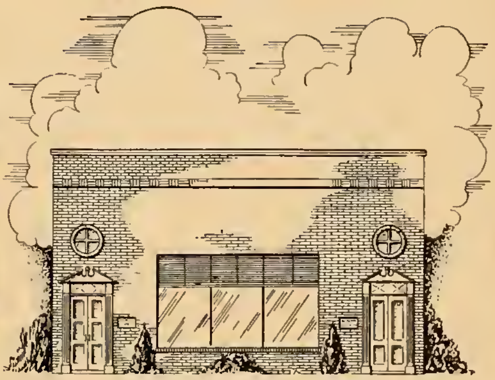

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NORTH CAROLINA MEDICAL JOURNAL

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WHAT MOVES MAN?

J. K. HALL, M. D.

RICHMOND, VIRGINIA

"In Gibeon the Lord appeared to Solomon in a dream by night: and God said, Ask what I shall give thee.

"And Solomon said, Thou hast shewed unto thy servant David my father great mercy, according as he walked before thee in truth, and in righteousness, and in uprightness of heart with thee; and thou hast kept for him this great kindness, that thou hast given him a son to sit on his throne, as it is this day.

"And now, O Lord my God, thou hast made thy servant king instead of David my father: and I am but a little child: I know not how to go out or come in.

"And thy servant is in the midst of thy people which thou hast chosen, a great people, that cannot be numbered nor counted for multitude.

"Give therefore thy servant an understanding heart to judge thy people, that I may discern between good and bad: for who is able to judge this thy so great a people?"

Is it little wonder the speech of the young king pleased the Lord?

Solomon's expressed concern was about the behavior of his subjects, and about the probable causative forces underlying their conduct. And well might he be interested in human behavior. Although he was the son of the king of a deeply religious people, Solomon barely missed being born out of wedlock. Solomon probably feared that some of his father's tendencies might be transmitted by heredity to him, and his concern might have been about some of his own urges as well as about the activities of his subjects. Whatever the reasons for Solomon's profound interest in the meaning of human conduct, he had evidently come to the throne fully determined to find out all he could about that phenomenon more interesting to a mortal than all other things—the behavior of his fellow-creature.

In the 3000 years that have come and gone since Solomon had his dream at Gibeon, mankind has been instructed by his pithy proverbs. No other mortal has looked so deeply and so understandingly into man's mind and heart, and has recorded so concisely and so lucidly what he saw there.

What is meant by behavior? Is conduct merely another statement of the same phenomenon? What underlies that feature of a human being's life that we speak of as behavior and conduct?

The living thing is responsive. It reacts to stimuli that reach it. The responsiveness of the living thing is its behavior. If the responsiveness be chiefly the manifestation of instinctive urge, I think the word "behavior" may define it. But if the living thing seems to be purposely directing the response, then the word "conduct" may more properly be used. All things that are alive, animal and vegetable, are in a condition of unstable equilibrium. They are in a state of constant change. They take in food and they give off waste. All living things, I think, are obliged to do those two things. To live, individually, is a primal urge. To live, racially, through descendants, is another instinctive urge. To live, to beget: those two innate desires urge the living thing to be unceasing in its efforts to survive and to perpetuate itself through progeny. Most of the activities of the most intelligent and the most civilized woman and man are but

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Read before the Ninth District Medical Society, Morganton, September 28, 1939.

elaborations of those blind instinctive urges. Free expression of all behavior-tendencies would make any degree of civilization impossible. Repression of all activities would result in mutism and general stagnation. The conflict betwixt expression and repression is always on, and out of the conflict come dreams and nightmares and many nervous conditions.

Why does the thing behave? You remember that a cynical scientist remarked that in contemplating his possible ancestral origin man has to take his choice between mud and a monkey. If evolution is a fact in substantiation of a theory, then man has slowly evolved throughout millions and millions of years from a tiny, scarcely visible cell into those upright beings that think so approvingly of themselves as to boast that God looks like them. In his slow ascent up from the salt water and the slime and the swamp, man's form has changed enormously; it had to change in order that he might be better able to feed and to defend himself. Change in form brought with it change in behavior. Each must have affected the other: the more complex structure made possible more elaborate behavior; the constantly enlarging behavior brought into existence a more complicated anatomical mechanism.

I doubt not that most of us believe that we understand our own behavior—its origin and its methods and its significance. But I am inclined to the opinion that most mortals have no more accurate knowledge of their conduct than they have of the structure of their bodies. Most people probably know as little about conduct, even their own, as about anatomy. And the medical student assures us that the study of anatomy is unending.

Although behavior may be difficult to understand, no one can doubt its importance. I doubt, indeed, if we are vitally interested in any other phenomenon. The printing presses, the radios, the communication facilities and most human tongues are kept busy in efforts to satisfy our innate curiosity about the doings of each other. But our concern about human conduct is often superficial, prejudiced, emotional, and subjective, rather than intellectual and critical. We are pleased or displeased by the behavior of another. We usually have a "feeling" for or against another's conduct. We make no dispassionate attempt to understand it—its causes and its purposes. We are generally interested only in justifying our personal opinion of another's conduct. In our own opinion our personal conduct is approximately perfect.

I think of instinct, emotion, and intelligence, one or the other, as the provocative of most conduct. What is instinct? Perhaps instincts are the habits of ancestors transmitted by heredity to their descendants. If you accept that definition, you are able to understand how complex instincts are. More concisely stated, instincts are definable as inherited racial behavior. But instinct at work in the individual constitutes the faculty of behaving so as to produce certain results, without foresight of the results, and without having experienced training in the performance of the actions. I know of nothing in life quite so interesting as instinctive activity. Life is so filled with it, indeed, that we are generally not aware of its presence, even within ourselves.

The first intimations of the approach of autumn have set many of the birds, for instance, busy in migratory flight to the south. Probably all life, vegetable as well as animal, may instinctively sense the approach of the inertia of winter. The leaves change color, mature, die, and fall; and all vegetable growth is usually suspended during winter. The activities of most animals, including man, lessen during the cold season; and the apparent lethargy called hibernation brings certain animals into a condition so static as to simulate death.

Our personal egotism is so great that we are unwilling to believe that any of our own behavior is of instinctive origin. We reserve instinctive behavior for the lower animals. I doubt not that we mortals, even the most intelligent and most cultured individuals, are more richly endowed with instincts than any one of the lower animals.

Sucking in the new-born infant is instinctive, and so, later, is crying, smiling, walking, talking, playing and imitating. In the adult human, I consider instinctive certain fears, anger, rivalry and emulation; mating, curiosity, fighting, killing, acquisitiveness; constructiveness, perhaps; and sociability or gregariousness. Modesty may be, although I doubt it, of instinctive origin. It is more likely to be imitative and inculcated. Love, in the biologic sense, is undoubtedly instinctive, and it constitutes, beyond a doubt, the mightiest urge known to man—stronger even than hate and fear. Love constitutes the primal biologic necessity, because it is intimately tied up with sexuality and with race-perpetuation. Jealousy and envy, complex states, difficult to understand, are probably instinctive. It is easy to understand that instinctive activity in our primordial ancestors tended to preserve the individual and to perpetuate the race. Mankind is still kept busy by those two activities.

I should like for us to understand clearly certain probable facts about instinct. Instinct is not virtuous. It is unmoral. It is not interested in right and wrong, justice and injustice, and it is without respect for public opinion and it is uninterested in conformity. Instinct probably does not feel shame or experience remorse. Instinct is physiological, rather than psychological, in origin. Instinct tends to express itself in movement and in action. It is a behavior-phenomenon. The primal instincts are probably not consciously concerned about purposeful ends. The instincts may be, indeed, without foreknowledge of the results of their activities. I think of the fundamental instinctive urges as innate yearnings, hungers, concerned only about their own gratification and nothing else. Instinct tends to release energy in the form of behavior, and thus to lessen tension and to bring comfort. The release is comforting to the individual, and the satisfaction experienced represents, perhaps, the personal conclusion of the instinctive urge. Mother-love holds the human mother in the burning building in an attempt to save her babe. But the same instinct keeps the mother-bear with her cubs, however great the danger to her life may be. The human mother and the bear mother are each tethered by the chain of instinct. They may be as helpless as their young.

No instinct is high or low. It is. And pure instinctive behavior merely is, just as energy is, and little more can be said of it. I think of it as being dreadfully frank and honest and shameless and unapologetic and democratic. There is certainly nothing snobbish about instinct, not even in a snob. Some other attribute gives him his snobbishness.

The influence and the might of instinct may be likened in the animate world to the majesty of gravity in the world of inorganic matter. No one assigns to gravity either virtues or vices. Gravity represents the universal presence of mere force in the material world. Instinct may be as omnipresent and as potent in the domain of living things. If we cannot understand, we can, at least, recognize and identify instinct as it manifests itself both in the living objects around us and within ourselves. To protect self, to immortalize self through descendants, to obtain pleasure, to escape pain: those are the instinctive objectives of life. Those four purposes underlie most activity, human and otherwise.

May we not briefly consider another factor powerfully influencing behavior? I speak of the emotions or feelings. The higher development the animal reaches, the more emotional it may essentially be. It is not easy to think of a tadpole as becoming emotionally disturbed. But a thoroughbred horse or dog may experience emotional mood-swings that differ in quality and in quantity little from our own. I realize that a highly intellectual individual may conceal her or his emotion. But no normal mortal can prevent the presence within itself of emotional responses, even though their transmutation into observable behavior may be inhibited.

The attempt to define the emotions generally results only in the cataloguing of those that are most often observed and experienced. The things with which man is universally familiar are probably indefinable. We are all familiar with feelings, some of which we like and some of which we disapprove. The instincts and the emotions are akin. I find myself wondering if many of the emotions may not come into being because of conflicts betwixt certain instincts, or because the fulfilment of certain instinctive urges is interfered with.

The adolescent boy, in illustration, may be apparently altogether happy with his kites and marbles and guns and games and fishing and hunting and fighting with other boys, until the particular *she* appears, and the emotion that he believes to be the grand passion lays hold of him. Even though his parents may call it only canine love, the boy knows better, and he surrenders himself fully to the enjoyment of the pristine pleasure, despite the jibes of his untouched fellows and the disapproval of his parents. Although he may have grown up side by side with the lovely little hussy, her nearness never caused a flutter of his cardiac muscles until yesterday. Then the normal instinctive mode of his daily behavior became enormously disturbed. His instinctive life became displaced by an emotional life.

Neighbors, two of them or many more, may have lived in propinquity and pleasantly together throughout the years. Their instinctive relations were calm and cordial. But a row in the church arose. Some of the neighbors became emotionally disturbed. They discovered in each other qualities of the basest sort, and they vocalized their psychological discoveries to all who would lend their ears. Another congregation was organized, and the church went into debt for the handsome new edifice.

Lest we might be inclined to doubt the might of the emotions in formulating conduct, even in the most intellectual, let us read fiction and poetry; for in those fields of literature men and women continue the struggle to define the indefinable—our deeper feelings. Most recorded history is, I little doubt, largely a record of the wreckage left by man's emotional mood-swings. David, in his last words with his son Solomon, left careful orders for the deaths of several of his enemies. Solomon not only carried out his father's fatal wishes, but he promptly busied himself in scattering death amongst his own enemies. Old Andrew Jackson, dying of tuberculosis, when reminded that in view of his great achievements he could look forward without regret to the call of the Boatman, voiced in an almost inaudible whisper his sorrow at not having shot Henry Clay and not having hanged John C. Calhoun The manifestations of their bitter hatreds placed and sustained in American history Andrew Jackson and John Randolph, Andrew Johnson and Thaddeus Stevens, and many others. I have often wondered if Abraham Lincoln was not driven from home by a termagant wife, and if American history might not be radically different if his home-life had been happy. Most great works, perhaps, are carried out by the unhappy in substitution for activities they would preferably engage in. Happiness brings contentment, and out of such a state large, purposeful labors do not arise. The world's great have probably lived unhappy and generally tragic lives.

At the beginning of every political campaign the American people are urged to replace their intelligence by their emotions; to feel and not to think; to hate and to hope, rather than to analyse and to reason. In consequence, every political campaign becomes an emotional orgy. Warfare represents, of course, the release of the instinct to dominate by killing that is innate in all of us. Many of man's primal instincts remain latent or under conscious control until unleashed by an emotional upheaval.

I would not have you believe that I think all of our emotions are base and that none of them is elevating. Life in the distracted world of today would be even more intolerable if we were robbed of hope and joy and love and sympathy and altruism and of all those higher aspirations that cause us to lift up our eyes to the hills eternal.

I think of our emotions as the atmosphere, the temperature, the tone of ourselves in which we live our lives. Our emotions affect our bodies and many of their functions, as well as our feelings of comfort and of discomfort. There are those who would tell you that we are amused because we laugh; that we become frightened because we run away; that we become angry because we swear and fight; and that we feel depressed and melancholy because we make our faces long, neglect our physical appearance, and talk plaintively and sorrowfully. Such a school of philosophy will tell you that the object or event which evokes the emotion does so by first causing changes in the functionings of the organs of the body. The other emotional school, if I may so speak, will tell us that the bodily changes come after and because of the changes in the tone and in the quality of the feelings. You will do your own thinking about these profundities. I know too little about them to proffer advice or to offer instruction.

Without emotions our lives would be without feeling. If we were wholly intellectual, all our acts might be highly rational, but their performances could bring us neither joy nor sorrow. The emotions are likely to be less interested in achieving a goal than the instincts are. The emotional experience, profound though it may be, may be largely delimited to the individual. The instinctive urge is apt to involve an object outside of the individual. The boy may love the girl powerfully, but may succeed in keeping his passion to himself. He is experiencing an emotion. The hungry cat exhibits no such restraint when the luckless mouse appears. There is instant and lightning-like movement. The mouse becomes cat. That is instinct at work.

I am not suggesting that all behavior of emotional origin should be suppressed. If we could not express our feelings through behavior—and there is no other way—we would be even worse off than we are. But hate is not likely to release commendable conduct, nor is wild joy apt to express itself rationally and constructively. We should—may I venture the opinion?—give heed to our motivations. And we should try to differentiate betwixt the good and the bad emotions. And we should, to be sure, when the situation calls for intellectual consideration rather than for emotionalism, try to submit the problem to our higher psychic levels, if we have such equipment, and if we can succeed in hoisting our problems so high.

The time of our departure draws near, and I have scarcely spoken of our intelligence as a possible source of any of our conduct. Do we think? Do we reason? Do we attempt analyses? Do we compare? Do we make inferences? Do we exercise judgment? Do we conclude? And in consequence of such activities do we formulate conduct? I wonder. The acquisition of facts may constitute knowledge, and the utilization of knowledge may represent wisdom. But no one is wise, and few are utterly foolish.

Most human behavior must constitute the result of at least three influences busily at work in all of us—instinct, emotion, intelligence. Instinct is by far the oldest of the three. We have been influenced by instinct for millions of years. Our emotions are younger; consequently they are more skittish and uncertain and much more likely to kick up their heels and to scamper away, not unlike a colt in a clover lot. Our intellects? Have we intellects? Our intelligence, if we possess it, has come last during the evolutionary process. It is still infantile, and we always expect not only too much of it, but the impossible of it. We must not expect too much of a mortal, either of self or of another. Disappointment and perhaps tragedy will result. We have probably set our civilization-standard above the reach of our capacity.

If those who are incapable of thinking were debarred from the effort, as children are shut out of industry, what might we suppose would happen? We undoubtedly, most of us, think we are thinking when we are only feeling. Usually, I fear, we think we have discovered a motive for the conduct after it has expressed itself. If the conduct is our own or that of our friends, we are likely to give a good reason for it; if the conduct be that of another, and especially that of an enemy, we assign a bad motivation to it. Psychiatrists call such exercises, I believe, rationalization. Assigning an intellectual reason for instinctive or emotional behavior probably constitutes rationalizing. All mortals engage in it freely, whether they ever heard of the term or not.

We probably have little intelligence. Were our conduct the product of it, we should be living in a quieter, a safer, a more difficult, and a much less interesting world. The influence of instinct and of emotion upon human behavior tends to make life much more irrational and unstable and undependable and noisy and violent and dangerous and destructive. But we love scandal and prize-fights and revivals and gossip and tragedy and the New Deal and Rugged Individualism and warfare and peace treaties and reconstruction in order that there may be another war.

What are we going to do about ourselves? We mortals have not yet learned the simple but necessary art of how to live with one another. We are, of course, not only the cruelest of all creatures, but we are probably the only animals left that are cruel for the mere pleasure of enjoying cruelty. We are probably instinctively predatory and homicidal. We fear no other animal as we fear our fellow-mortal. For that reason we have little democracy. We are afraid of one another, afraid for people to have charge of their own government. It is for that reason that democracy and Christianity have never had a trial. We would be making a little progress if we should try to realize that instinctive savagery may masquerade as patriotism, and that a war for the sake of democracy may be a concealed drive for conquest. We blunder irretrievably when we mistake a scoundrel for a patriot. We are anxious for others to be Christians, but not to be Christians ourselves. We reason unsoundly when we deny our enemies the possession of any of our virtues and ourselves any of their vices. We are all, of course, infinitely more alike than unlike. There are those, indeed, who believe that our individual enemies are those most like ourselves. Unwittingly we may project into them our most grievous faults; and then, of course, we hate them.

We are little inclined to submit ourselves and our own problems to our intellects for examination and for final adjudication. To think and to reason and to form valid opinions require labor and patience and fortitude and courage. Why evolve an opinion if one would not stand by it? Only the individual can think. Only the individual can develop an opinion. Only the individual can be interested in the search after truth. Only the individual can be honest. Only the individual can have courage. Only the individual can seek to know God. The mass can do none of those things. The mass, as such, can feel the influence only of the instinctive urges and of the emotional perturbations. The mass can destroy; it cannot create. The leader, demigod or despot, can make successful appeal only to the feelings of the group. He would not have them to think. When the members of the group begin to think the leader is already lost. The members of an intellectual group may act concordantly and intelligently, but their activities express their thinking and not their emotions. There is little interest in intellectual honesty. To me the term means honesty with self.

I would not have you to think disparagingly of man's instincts nor of his emotions. Man's intellect may be a sort of implantation—don't we expect the schools to create intelligence in our children?—but our instincts and our feelings are as old as the hills. And we must not be embarrassed by the primitive suggestions they often give us, for they were taking care of our ancestors when existence was hazardous and when ethics and religion were unknown. Our instincts have not been to Sunday School, and our emotions were too old even for the Bible Class when they got to Sunday School for the first time.

We must learn to get along better with one another as we are, for there is no valid evidence that we have undergone much improvement in our morals since the first line of history was written. We can much more profitably engage in trying honestly to know ourselves as we are than in efforts to improve ourselves by findings in others reasons for our condemnation of them. If we had sense enough and honesty enough to enable us to appreciate the importance of the instincts and the emotions in all of us, high and low, big and little, in individuals and in groups, then at the meetings of the international conferences such human attributes would be dealt with. But instead, at the post-war assemblages, navies and guns and high-sounding, hypocritical philosophy are considered. The great conferences always take care that the basic causes of discord are never allowed to be brought up for discussion. What are those causes? Crowding and threatened starvation. Peace and safety will not be found amongst people in such condition. Both our own vast country and most of the far-flung British Empire are unpopulated. The English-speaking people are chiefly to blame for man's present predicament.

The educational institutions insist that it is their high duty to fit youth for the exercise of leadership. Is it? If all should be made fit for leaders, whom would the leaders lead? Our schools should devote themselves to the attempt to make possible the full development of the nation's youth as individuals. Let them be prepared to live their own lives, with each as his own leader. Most of the world's tragedies have been caused by leaders—of the wrong sort. The quality of our own national life has been irreparably damaged within recent years by the abdication of the individual.

Man as an independent, thinking, resourceful, courageous entity, has almost disappeared. His retirement from our national life has been enormously expedited since the World War. Man is now, here in the very home of democracy, being thought of not as a particle of the Divine, but as an infinitesimal portion of many enormous groups—civic, political, industrial, educational, and religious. The abdication of the individual is almost complete, even amongst us. Democracy is only mechanically a form of government. Democracy is fundamentally a state of mind. It represents man's belief that if he so wills no thing and no person and no power can intervene as an obstruction between him and his Creator. But he who would have personal liberty must be forever fighting for it; for man hates for his fellow to be free. Consequently the individual, or the group of individuals, who give up their democracy, give up also their God.

A QUARTER-CENTURY OF HEALTH PROGRESS IN NORTH CAROLINA

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In the preparation of this paper I have consulted some of the state's best authorities on this subject, including the present and all living past presidents of our State Medical Society and, with a few exceptions, at least one member of each county medical society. This group included general and special medical practitioners, urologists, radiologists, pediatricians, general and special surgeons, public health physicians, Negro physicians, dentists, nurses, hospital administrators, pharmacists, and field, research, and teaching workers in their various lines. None of these is responsible for the faults and limitations of this paper; each contributed valuable thoughts.

No attempt is made to give a comprehensive array of statistics, and my own limited experience prevents the presentation of personal medical reminiscences covering the period. What follows is an informal discussion of some of the factors which these competent observers feel have contributed most to the decrease in illness and postponement of death during the last quarter-century.

The year 1914 saw the beginning of a World War; 1939 saw the rapid development of events that may lead us into another major catastrophe, unless we have developed more immunity from infectious propaganda and contagious stampedes than has so far become apparent. Doctors at this time are in a strategic position to appreciate and emphasize the necessity of steering our national enthusiasms into healthful pursuits of peace. Our defense mechanisms, individual and national, must be built up and kept strong enough to leave a margin of safety even in emergencies; our chief fight must continue to be against suffering, ill health and death of body, mind and spirit.

A brief glance at some pertinent vital statistics may point to some of the specific trends in morbidity and mortality during the quarter-century. Each of the items in the following table is worthy of careful individual analysis.

Comparison of Illness and Death Rates in North Carolina For 1914 and 1939

(Figures in parentheses are rates per 100,000 population, except those for infant and maternal mortality, which are based on 1,000 live births.)

	Deaths				Cases			
	1914		1939*		1918[1]		1939*	
Tuberculosis	3,287	(139.3)	1,806	(51.2)	3,514	(148.9)	2,365	(67.0)
Typhoid	845	(35.8)	46	(1.3)	3,472	(147.2)	353	(10.0)
Diphtheria	372	(15.8)	173	(4.9)	1,366	(57.7)	2,452	(69.3)
Scarlet Fever	21	(0.9)	14	(0.4)	864	(36.6)	2,713	(76.9)
Smallpox	26	(1.1)	1	(0.0)	983	(41.2)	15	(0.4)
Pellagra	557	(23.6)	205	(5.8)	604	(19.1)(2)	212	(6.0)
Syphilis	70	(3.0)	356	(10.1)	2,084	(82.5)(3)	28,534	(809.0)
†Infants Under One Year	62,245	(90.3)	47,046	(58.5)				
†Pregnancy—Childbirth	503	(7.3)	386	(4.8)				
Pneumonia	2,371	(100.5)	2,151	(61.0)				
Diarrhea Under Two Years	1,916	(81.2)	667	(18.9)				
Heart Disease	1,795	(76.1)	5,714	(162.0)				
Cancer	826	(35.0)	1,968	(55.8)				
Nephritis	1,446	(61.3)	2,889	(81.9)				
Accidents	936	(39.7)	2,307	(65.4)				
Ill Defined—Unknown	4,260	(180.6)	917	(26.0)				

My comment on this table must necessarily be brief. Your attention is called to the rapid decrease in mortality from tuberculosis, typhoid, diphtheria, scarlet fever, smallpox, pellagra, pneumonia, and infant and maternal mortality. The increase in syphilis deaths, and part at least of the increase in the cancer, nephritis and heart disease deaths, as well as the greater inci-

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* Provisional
1. First year of reports
2. for year 1929
3. For year 1919
† For 1,000 live births
Estimated population of State in 1914: 2,359,325; in 1939: 3,527,000.

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dence of diphtheria, scarlet fever and particularly syphilis, are largely due to improved diagnosis and reporting. The same factor has decreased deaths from ill-defined and unknown causes. Automobiles are associated with most of the increased deaths from accidents. This table illustrates very well the difference made in official statistics merely by changes in the accuracy of reporting or diagnosis.

Every physician realizes that the health conditions in a community are not entirely dependent on the available medical care. General economic conditions, family income, educational and cultural levels, available food supplies, dietary habits, and dozens of other factors have a bearing. For most people all these things have improved along with medical facilities. In too many instances, however, there are community efforts for supplying about everything except medical care.

Schools

In twenty-five years we have seen state education grow from isolated scattered training of the few to a near-realization of Aycock's dream of giving every boy and girl a chance to develop to capacity. School health and sanitary facilities, the numbers of young citizens completing the seventh grade, high school and college, and the public and private investments in education have multiplied many times over.

Roads

In 1914, there were 4,313 miles of improved sand clay roads and a few short lengths of narrow waterbound macadam or brick roads for the use of horse-drawn vehicles or the 12,695 motor vehicles. Doctors and patients alternately faced stifling dust and jolting mudholes. Now we have 58,333 miles of improved roads, with 10,454 miles of hard-surfaced roads that bring doctor, patient and hospital closer together and allow more than half a million motor vehicles to travel much more safely than many of their drivers permit.

Hospitals

In 1914, there were forty small general hospitals in the state, the oldest of which, Rex in Raleigh, was established in 1839. Five were in Charlotte, and twenty-eight were privately built, developed and operated without philanthropic or tax-fund aid. Hospital facilities have increased rapidly, and the personnel, equipment, planning and service have kept pace. Radiological, bacteriological and pathological services have reached a high standard of quality and have become much more widely available. The impetus to progress given by the Duke Endowment and by the Hospital Savings Association sponsored by the State Medical Society has been tremendous. The developments in hospital standards and professionally recognized ratings, particularly those of the American College of Surgeons and the Duke Endowment, have helped to weed out the unfit and to place a premium on efficiency and service. Hospital prepayment experience should facilitate the development of satisfactory prepayment plans for complete medical and health care.

Dentistry

The profession of dentistry is young, alert, progressive and not hindered by "the prejudice of experience" and ancient tradition. Dentistry's contributions have been great, especially for pregnant women and for young children. Perhaps the most significant work has been the pioneering inauguration in 1918 of the first State Health Department School Dental Program and the first mouth-health teaching in the schools. The educational program in oral hygiene has been excellent. Dentists of the state have set a fine example to the other professions with their whole-hearted coordination of effort.

Nursing

Nursing care has had a rapid growth in quantity and quality. General and professional education requirements have been revolutionized, just as they have been for doctors, pharmacists and dentists. Maid service and farmed-out unsupervised home nursing is no longer the chief duty of a pupil nurse; she is being given a background befitting her professional status.

Pharmacy

The pharmacist plays a very important part in medical treatment, and progress in this field has been mainly toward better training, and replacement by pharmacists of nurses and other even less trained dispensers of drugs in hospitals. When physicians accept full responsibility for the treatment of those suffering from gonorrhea, mental ills and other ailments difficult to care for and now largely avoided by most doctors, and when prescription writing is less dependent on suggestions of detail men, there should be a greater trend away from counter prescribing and the present widespread use of patent medicines.

Negro Health

Since there are a million Negroes in the state, and a large percentage of these are in the "indigent, ignorant and suffering" group, we cannot overlook the special medical problem involved for them and for others in a similar low income group. Great progress has been made toward better general living and economic conditions concurrently with specific improvement in health care, such as: More and better trained physicians, dentists, and nurses, and growing use of these in public health services; better hospital facilities, including obstetric units; increasing quantity and quality of medical, prenatal, delivery, postnatal and infant care, and improvement of midwives; wider use of health education built around Negro Health Week; special efforts to control infections such as tuberculosis, typhoid, venereal diseases, malaria, pellagra; better housing with safer water and food supplies and abolition of open privies; examinations of food handlers, prospects for marriage, and domestic servants; and general closer racial cooperation in medical care. Today, however, much is yet to be done toward better negro health, particularly in education, economic security, housing, nutrition, protection against infections, and in bringing medical, dental, nursing and hospital care within financial reach. A single example of the great need is that 65 per cent of negro deliveries are still done by midwives. As a group, negroes have been most cooperative and appreciative, and wherever they were given a chance have been most willing to participate valiantly in the solution of their health problems. Fortunately the former great difference between the amount and quality of medical care available to the two races is being gradually decreased.

Professional Qualifications and Working Facilities

Perhaps the greatest achievement during this period has been the improved qualifications of medical and health professions and their working facilities. Training of physicians, nurses, dentists and pharmacists has been intensified and extended over a longer period, and each group is starting with a better educational background. Pathology, radiology, biochemistry and bacteriology have been developed rapidly. Progress in surgical, obstetric and pediatric judgment and techniques would alone require volumes to recount. Mere examples are the wider use of precision surgical instruments, better anesthetics, and more effective aseptic techniques and antiseptic agents; greater use of parenteral fluids including transfusions; decrease in number and gradual improvement of midwives, and better control of toxemias; safer infant feeding, including cleaner and safer milk and better refrigeration of foods.

The University of North Carolina Medical School, Wake Forest (with plans already under way for the full four-year work), and more recently Duke have consistently given a high grade of medical training. Hospital field nursing schools have correspondingly been made better. The University of North Carolina School of Public Health gives promise of helping to prepare public health workers to carry on health work on a strictly merit basis. Extension medical courses, and also better journals and professional group meetings have done much to enable doctors to keep up with the best current practices. These extension courses, begun in 1916, constituted a pioneering venture in American postgraduate medical education. Gradual enlargement of full time public health staffs is a fundamental and continuing change, beginning at the State Board of Health with the Laboratory Director in 1908 and the State Health Officer in 1909; and in county health departments, beginning with Guilford, which started the second full-time county health department in the United States in June, 1911. (Jefferson County, Kentucky, claims to have begun work in 1908.) In 1912 Robeson County began the first full-time strictly rural department in the country. The year 1914 opened with only eight frail county health departments; in 1939 seventy-six of our one hundred counties had health departments, with growing financial support and with staffs of increasing competence, and our State Board of Health had developed into one of the best in the nation.

Individual Health Care

In the field of individual health care progress has been rapid, even though the mileposts are not so evident. Progress in the fight against tuberculosis and syphilis are indicated by interpretation of the statistics mentioned above. Gonorrhea is still neglected, though chemotherapy offers promise of improvement. Pellagra is decreasing. Automobile accidents and appendicitis should be responsive to proper control measures. The degenerative diseases—heart disease, cancer, nephritis—take an increasingly high toll, and their control calls for improved individual hygiene practiced from early life. Perhaps we shall again take up the life extension work with periodic physical checkups, begun in 1917, but soon dropped. Care of those in prisons, county homes and mental hospitals is improving slowly, and we can even see the beginning of enlarged mental hygiene efforts. The treatment and control of pneumonia with chemotherapy and sera, and of diabetes with the insulins are increasingly satisfactory. The facts being gained concerning vitamins, hormones, and the relationship of soil chemistry to the value of foodstuffs are becoming practically applicable.

Control of Infections

The control of infections through sanitation and immunizations has been the chief work of health departments and of many private physicians and engineers. Initial impetus came with the report on hookworm at the State Medical Society meeting in 1903, followed during the next year by field work in the state and work of the joint State Board of Health and Rockefeller Sanitary Commission during 1910-1914. The 1909 legislature provided for the beginning of vital statistics legislation. This was followed by enactment of the Model Law in 1913 and the state's admission to the registration area for deaths in 1916 and for births in 1917. Control of public watersheds began in 1909; the sanitary inspection of hotels and cafes started in 1917; and the sanitary privy law of 1919 was followed by better control of public milk supplies in 1923. From swatting flies and mosquitoes, we have gradually turned to screening and an attack on the vulnerable breeding places of these disease carriers. Environmental sanitation has been mainly responsible for the reduction in typhoid, dysenteries, hookworm, colitis, infantile diarrhea and enteritis. Careful epidemiological investigations by competently trained workers are not only showing that the infected family has been using a polluted water supply but also how and from what human source the disease came by way of that water. Institution of proper control measures is then a relatively simple matter. Epidemiological studies have also amply demonstrated a fact which we are prone to overlook in planning control measures: that most disease is subclinical. The development of routine use of tests formerly considered special, such as the Wassermann test or the malaria slide examinations, has improved diagnosis and consequent treatment. Constantly improving state and local laboratories have contributed greatly to this fundamental progress.

New biological preparations for preventive and curative inoculations, along with later chemotherapy, particularly the sulfonamide group of drugs, have made more scientific medical care possible. Research has led the way. The lag between new discoveries and their useful application has been decreased.

Health Education

Health information for the public has been increasingly emphasized by private practitioners and public health workers. Of primary importance have been instruction in sanitation and person hygiene, and the prevention of infections by inoculations against typhoid, diphtheria, and smallpox. The State Board of Health has done a notable job in keeping the public informed. The *Health Bulletin* has led the way since the first copy came out in April, 1886. The practice of giving careful individual replies to as many as 5,000 letter inquiries a year has been of inestimable value. The medical inspection of schools, and cooperation with public school teachers, begun in six counties in 1915, has progressed rapidly, culminating in the Coordinated School Health Unit established in 1939. Even those who supply the greatest health problems are developing a preventive outlook and learning when to call the doctor and how to cooperate with the physician. A better informed public demands, and is more willing to pay for, adequate medical care; and, as a result, medical and health care are being democratized. Individual and group instruction, movies, newspaper articles, radio programs and exhibits have proved useful. Better public understanding of health problems has resulted in coordination of efforts and in better planning for family and community, as well as for individual, health.

Child Hygiene

In no field have more notable contributions been made than in child hygiene. From the school child the work has proceeded nearer toward the sources of individual life: to the preschool group, to the infant, to postnatal, obstetric and prenatal care of the mother, to the hygiene of conception, and beyond to preparation for marriage. Midwives have been reduced from 9,000 to 2,200, and these latter are trained and carefully supervised. An act to prevent infant blindness was passed in 1917. From 1918 to 1923 over 23,000 tonsil-adenoid operations which were sponsored and planned by the State Board of Health, and performed by private physicians, demonstrated the usefulness and safety of this procedure. A law requiring the physical examination of school children and one to control venereal diseases were passed in 1919. In 1920 an elaborate educational unit on sex hygiene and venereal diseases was developed. The 1921 Marriage Law gave physicians a strategic opportunity to prove the usefulness of medical examination and advice to the prospective heads of a new family, but neither physicians nor those about to marry appreciated the situation properly and therefore the law was revoked. Later, marriage, pregnancy, and domestic servant laws of greater usefulness were passed. Sheppard-Towner funds from 1922 to 1929, Social Security Funds since 1936, and the Lafollette-Bulwinkle and Smith Reynolds Funds since 1938 have vitally stimulated health care through rapid progress in general local health work, but especially through syphilis control and maternal-infant hygiene. When the Reynolds Fund trustees gave their fund straight to our State Board of Health without setting up a separate organization of their own, they did something new in philanthropy.

Maternal-infant health centers have increased rapidly since 1936 wherever there is considerable midwife practice. These 150 centers are operated by 300 practicing physicians, and the whole community is being benefited as thousands of women are learning for the first time the value of medical care.

Closing Comment

In twenty-five years we have seen miraculous progress in accuracy and efficiency of prevention, diagnosis, and treatment of disease. Efforts against hookworm and typhoid have demonstrated the importance of keeping man's own filth from his water, food and feet—environmental sanitation. The scientific program aimed against tuberculosis has stimulated individual hygiene, including improved nutrition. Recent widespread instruction and keen interest in syphilis have awakened a profound feeling of community responsibility, not only for control efforts against this disease, but for general medical and health care as well.

The rapid increase in speedy communication and transportation have brought new conveniences and new hazards. A calamity awaits us if progress in these or in other mechanical contrivances outruns that of medical safeguards.

Widened and deepened knowledge has necessitated specialization; and specialization, along with the development of precision methods in prevention, diagnosis and treatment, has greatly reduced the situations in which doctors formerly found themselves helpless. The specialist who cures an ailing stomach or a diseased sinus, or even prevents the occurrence of certain infectious diseases, however, may yet leave the individual with disintegration of morale that prevents usefulness or leads to anti-social behavior. In our cocksureness and pride of achievement, we hear a warning that the whole man is more important than a single organ or system; that our efforts against mental or physical breakdown and degenerative disease are far from adequate; that undiagnosed emotional disturbances often send patients to cultists and quacks; that too often when we most desire to heal we are utterly helpless; and that many young doctors know too little of patience, individual and family counseling, and humility.

Health progress in this quarter-century has been chiefly in better control of infections, in improving nutrition and in increased health education. Emphasis has been largely on the first; further progress lies in a better balance among all three and in doing more to control the non-infectious enemies of good health.

No "leading ten" or other "leading" group of contributors to this remarkable health progress can be selected. A few names recur frequently—almost monotonously—when one recounts fundamental contributions to the health progress of our state during this period. Many more have served magnificently away from the footlights. History may as properly recount the many nameless joint contributions of all as tell the stories of a few leaders. Those whose spirit and fine works have been recognized by their fellows and the public generally would, no doubt, be the first to insist that equal recognition be shown to all who have quietly, courageously, devotedly, happily given their best toward the prolongation of useful life and the promotion of more abundant health for all in North Carolina during the last twenty-five years.

CARCINOMA OF THE CERVICAL STUMP

A Study of the Incidence in a Series of Patients with Cervical Carcinoma Seen in North Carolina

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In 1932 through funds and secretarial facilities furnished by the Free Hospital for Women a study was made of the occurrence of carcinoma of the cervical stump by tracing the patients who had undergone supravaginal hysterectomy(1). This was a tedious and expensive method of arriving at a conclusion but, as Dor(2) and Stark(3) say, it is the only true way of determining how serious the threat of cervical stump carcinoma is. In 1936 a similar attempt to trace patients was made in North Carolina. This was abandoned because the population is so largely rural, and because families move about considerably and the incidence of illiteracy is high. It became obvious that only the data available in the hospital records could be used in any study. The patients seen in the out patient department or treated in the house from the opening of Duke Hospital in 1930 through January 1940 on whom the diagnosis of carcinoma of the cervix was made are included in the study. Patients who might have had adenocarcinoma of the fundus involving the cervix or recurrences following an incorrectly done supravaginal hysterectomy are not included. During the decade a total of 620 patients with carcinoma of the cervix were seen. The diagnosis was made either by biopsy or, in advanced cases, by gross appearance only. These patients were from North Carolina, South Carolina and Virginia; a few came from Tennessee and Georgia. The general series of patients with carcinoma will be reported in detail later.

Thirty-four patients had carcinoma of the cervical stump when seen in Duke Hospital. One patient had a large recurrence following the excision of a carcinomatous stump elsewhere. Of the remaining 585 patients, 348 were white and 237 colored, a ratio of about 59 to 41. Only 129 had a fairly early lesion, confined to the cervix (Schmitz I or II.) Four hundred and forty-two, or about 73 per cent, had advanced lesions (Schmitz III, IV or V). In 14 patients, either because of incomplete description or previous treatment, the state of lesion could not be exactly determined. This classification, it must be made clear, was done by one person on the basis of recorded descriptions. In most cases contemporaneous grading was not available. The distressingly large number of advanced cases in this series is apparently not peculiar to this region. Ward and Sackett(4) in a series of 752 patients with cervical carcinoma reported an incidence of 80 per cent advanced cases. Watkins(5) in Portland, Oregon, reports an incidence of 70 per cent advanced cases in a series of 154 patients.

Fifty-four patients had received previous treatment with x-ray or radium elsewhere. Eight had been subjected to a total hysterectomy, and 8 more had received irradiation in addition to hysterectomy. There were seven instances of adenocarcinoma of the cervix confirmed by biopsy. Three patients

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Read before the Section on Gynecology and Obstetrics, Medical Society of the State of North Carolina, Pinehurst, May 15.

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CARCINOMAS OF THE CERVICAL STUMP - DUKE UNIVERSITY HOSPITAL 1930-1940

PATIENT	COLOR	AGE	PARA.	ORIGINAL OPERATION	TREATMENT OF ADNEXA	CONDITION REQUIRING OPERATION	INTERVAL	STATE OF CARCINOMA	PATHOLOGY OF CERVIX	REMARKS
1	C	35	2-0-2	SUPRAVAGINAL HYSTERECTOMY	BILATERAL SALPINGO-OOPHORECTOMY	MYOMA, CHRONIC SALPINGITIS	1 MONTH	EARLY	SQUAMOUS	OPERATED AT DUKE HOSPITAL
2	W	49	8-1-5			MYOMA, TUBO-OVARIAN ABSCESS	3 MONTHS	ADVANCED		LOWER SEGMENT EDEMATOUS AT OP
3	C	29	1-1-0			MYOMA	4 MONTHS			CERVIX CAUTERIZED
4		20	2-0-2			UNKNOWN	5 MONTHS	EARLY		
5		40	6-1-4			MYOMA	6 MONTHS	ADVANCED		
6		34	6-0-6			MYOMA, CHRONIC SALPINGITIS				
7	W	53	3-0-3			UNKNOWN	7 MONTHS			CERVIX HAD BEEN EXCISED
8	C	40	3-0-3			SALPINGO-OOPHORITIS	1 YR 5 MOS			
9	W	59	8-0-8			UNKNOWN	2 YEARS	EARLY		
10	C	54	10-0-2					ADVANCED		
11		42	2-2-0			MYOMA	3 YEARS	EARLY		
12	W	56	4-0-2			UNKNOWN		ADVANCED	NOT RECORDED	PREVIOUSLY IRRADIATED
13	C	74	0-0-0			MYOMA				IRRADIATED AT DUKE HOSPITAL
14	W	38	0-0-0				5 YEARS		SQUAMOUS	
15	C	36	2-2-0							CERVIX NORMAL AT OPERATION
16		36	5-0-5							
17	W	36	8-2-6		LEFT SALPINGO-OOPHORECTOMY	ENDOMETRIAL POLYP, SALPINGITIS	6 YEARS			CERVIX CAUTERIZED AT DUKE HOSPITAL
18	C	56	9-1-5			MYOMA	7 YEARS		NOT RECORDED	
19		57	0-0-0				9 YEARS		ADENOCARCINOMA	OPERATED AT DUKE HOSPITAL
20		44	4-0-2			UNKNOWN			NOT RECORDED	IRRADIATED AT DUKE HOSPITAL
21		34	0-0-0		BILATERAL SALPINGO-OOPHORECTOMY			EARLY	SQUAMOUS	
22		54	9-2-7			MYOMA	10 YEARS	ADVANCED		
23	W	43	4-1-3			RETROVERSION	11 YEARS			
24		54	6-1-2			MYOMA		EARLY		
25		57	9-0-9			UNKNOWN		ADVANCED		PREVIOUSLY IRRADIATED
26	C	40	7-7-0			MYOMA			NOT RECORDED	IRRADIATED AT DUKE HOSPITAL
27		43	6-0-6						SQUAMOUS	
28		53	10-6-3				14 YEARS		NOT RECORDED	IRRADIATED AT DUKE HOSPITAL
29	W	38	3-2-0		BILATERAL SALPINGECTOMY RIGHT OOPHORECTOMY	UNKNOWN	15 YEARS		SQUAMOUS	
30	C	49	2-0-1			MYOMA			NOT RECORDED	IRRADIATED AT DUKE HOSPITAL
31	W	52	7-2-3		BILATERAL OOPHORECTOMY	SALPINGO-OOPHORITIS			SQUAMOUS	
32		42	3-1-2			UNKNOWN	16 YEARS		NOT RECORDED	CAUTERIZED - 12 YEARS TO 13 YEARS AGO
33		44	6-3-3			MYOMA	18 YEARS	EARLY	SQUAMOUS	
34	C	57	0-0-0			UNKNOWN	20 YEARS	ADVANCED	NOT RECORDED	IRRADIATED AT DUKE HOSPITAL
35	W	63	7-1-6		BILATERAL SALPINGECTOMY	MYOMA	23 YEARS	EARLY	SQUAMOUS	

had an associated pregnancy, and two had prolapse. Twenty-five patients gave a definite history of never having been pregnant, while 553 had been pregnant. The status of seven in regard to pregnancy was not known.

The youngest patient with ordinary carcinoma of the cervix was twenty-three years old, and the oldest eighty. The age at which cancer was diagnosed was:

Age	*No. Patients*
20-29	38
30-39	144
40-49	197
50-59	142
60-69	54
70-79	9
80	1

With these data concerning the contemporaneous patients with true carcinoma of the cervix, the status of the 35 patients with stump carcinoma can be more intelligently evaluated. The incidence in a total series of 620 cases is about 5.6 per cent. As Faure[2] has already said, this is the sum total of information that can be derived from these statistics. In making interpretations, the facts that Duke University Hospital has the most extensive radiological equipment in the vicinity, that it is a teaching institution and that the patients are referred from a large geographical area must be constantly borne in mind. Otherwise an alarming significance might be attached by the "totalists".

Tabulated below are the incidences of carcinoma of the cervical stump according to the time at which the study was made and the geographical region.

Year	*Author*	*Region*	*Corcinomas of the Cervix*	*Carcinomas of the Cervical Stump*	*Per Cent*
1930	Branscomb(6)	Baltimore	1804	46	2.3
1932	Dor(2)	Marseilles	364	8	2.0
1934	Fahndrich(7)	Kiel		12	1.41
1934	V. Graff (8)	Iowa	263	22	8.3
1935	Kretschmar & Sprague(9)	Ann Arbor	1022	18	1.76
1935	Healy & Arneson(10)	New York	2600	67	2.6
1935	Richardson(11)	Baltimore	910		2.3
1935	Nuthall & Todd(12)	Manchester		38	2.5
1936	Meigs(13)	Boston	1218	26	2.5
1936	Scheffey(14)	Philadelphia	273	10	3.66
1937	Nielsen(15)	St. Lukas, Stiftelse	420	9	2.0
1938	Ward & Sackett(4)	New York	752	56	7.4
1939	Black(16)	Cleveland	234	19	8.1
1940	Pearse	Durham	620	35	5.6

6. Branscomb, L.: The Occurrence of Cancer in the Uterine Cervical Stump After Supravaginal Hysterectomy, Am. J. Obst. and Gynec. 20:66-69 (July) 1930.
7. Fahndrich, J.: Das Risiko eines Zervixstumpfkarzinoms nach supravaginaler Amputation, Zeltschr. f. Geburtsh. u. Gynak. 109:382-407, 1934.
8. Von Graff, E.: Cancer of the Cervical Stump Following Subtotal Hysterectomy, Am. J. Obst. and Gynec. 28:18-32 (July) 1934.
9. Kretschmar, N. R. and Sprague, G. S.: A Consideration of the Surgical Menopause After Hysterectomy and the Occurrence of Cancer in the Stump Following Subtotal Hysterectomy, Am. J. Obst. and Gynec. 29:168-175, (February) 1935.

The ages of the patients with carcinoma of the stump were as follows:

Age	No. Patients
20-29	2
30-39	8
40-49	11
50-59	12
60-69	1
70	1

The youngest was twenty years and the oldest seventy-four. Five of the patients, or 11 per cent, were nulliparous. Thirteen were white and 22 colored. The condition for which the supravaginal hysterectomy was performed was:

	No. Patients
Unknown	11
Salpingo-oophoritis	3
Fibromyoma	20
Retroversion	1

Since only three of these original hysterectomies were performed at Duke this information can be regarded as of doubtful accuracy. Attempts to obtain information from the original operators were in the main unsatisfactory. It cannot be said that fibromyomata are responsible for subsequent development of stump carcinoma. The colored patients with carcinoma of the stump outnumber the white. In this region the commonest indication for hysterectomy is a fibromyoma. Colored patients are much more likely than white to develop fibromyomata. The data are too incomplete on the handling of the adnexa to permit any conclusions. When the diagnosis of cancer of the stump was made at Duke Hospital 26 patients presented advanced lesions. This represents an incidence of 74 per cent. In one patient the state of the lesion was obscured by previous treatment. Only 8 presented a lesion confined to the cervix. This incidence of advanced lesions is the same essentially as in the general series.

Almost all authors have attempted to classify their patients with carcinoma of the stump into those who had the disease at the time hysterectomy was performed and those who have "true" carcinoma of the stump. Schafer(17), Meigs(13) and Dor(2) have stated that any carcinoma that becomes evident within a year following the operation was probably present at the time of the supravaginal hysterectomy. The first case in the table illustrates the difficulty of applying this criterion. A thirty-five year old colored female had a supravaginal hysterectomy for fibromyomata and chronic salpingitis in Duke Hospital. The patient was admitted by a reliable observer and seen in preoperative conference by at least five others. All described the cervix as small and clean. The removed uterus gave no evidence of malignancy. When the patient was seen a month after discharge the cervical stump was small and clean, but there was an obvious early carcinoma. This was arising from the mucosa of the *portio vaginalis* and was proved to be squamous by biopsy. This case shows the difficulty of sharply differentiating the "true" from the "false" carcinoma of the stump. On the other hand, the second case in the table is probably illustrative of the more usual state of affairs. The patient had a supravaginal hysterectomy for tubo-ovarian abscess and fibromyomata three months before an advanced carcinoma of the stump was discovered. The operator supplied the information that the lower uterine segment and cervix were of a peculiar edematous consistency. It is reasonable to infer that this patient did have carcinoma at the time of operation. Exact observations of the above sort are rare. Most cervical carcinoma arises from squamous epithelium. Conization, cauterization and plastic procedures are directed toward removing the secretory mucosa of the endocervix, and more cases of carcinoma are constantly being reported after such prophylactic procedures. Women who have not been pregnant develop carcinoma of the cervix with moderate frequency. The origins of carcinoma are still too shrouded in obscurity for any very positive statements to be made. The development of cervical carcinoma is not entirely on the basis of previous trauma and infection. It might be that a genetically potentially malignant cell can be quiescent for long periods

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10. Healy, W. P. and Arneson, N.: A Study of Carcinoma of the Cervical Stump Developing After Subtotal Hysterectomy. Am. J. Obst. and Gynec. 29:370-383 (March) 1935.
11. Richardson, E. H.: Total Versus Subtotal Abdominal Hysterectomy in Benign Uterine Disease. Am. J. of Surg. 28:588-595 (June) 1935.
12. Nuthall, J. R. and Todd, T. F.: The Prognosis in Carcinoma of the Cervical Stump after Subtotal Hysterectomy. A Critical Analysis of 38 Cases. J. of Obst. and Gynaec. Brit. Emp. 42:860-866 (October) 1935.
13. Meigs, J. V.: Carcinoma of the Retained Cervix or Subtotal Versus Total Hysterectomy. Am. J. Obst. and Gynec. 31:358-366. (February) 1936.
14. Scheffey, L. C.: Carcinoma of the Cervical Stump. J. A. M. A. 107:837-844 (September 12) 1936.
15. Nielsen, M.: Carcinoma of the Cervical Stump After Supravaginal Amputation. Acta obst. et gynec. Scandinav. 17:295-306, 1937.
16. Black, M. E.: Cervical Stump Carcinoma, Surg. Gynec. and Obst. 68:898-902, (May) 1939.
17. Schafer, G.: Beitrag zur Frage des Cervixstumpfkarzinoms, Zentralbl. f. Gynak. 57:2068-2074 (September 2). 1933.

and then explode into neoplastic activity. Certainly the time elapsing between the supravaginal hysterectomy and the development of carcinoma cannot be used with too much assurance in determining whether carcinoma was present at the time of operation. Also the remarkable individual variation of each neoplasm must never be forgotten. The case of the red haired Jewess with large metastases in her neck from a squamous carcinoma of the cervix is in point.

Of the 35 patients with carcinoma of the stump:

7 had the diagnosis made in less than a year after operation—20.5 per cent. All these had biopsies and had squamous carcinoma.

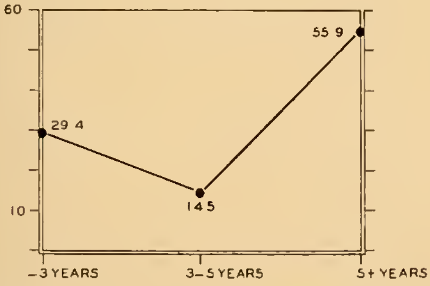
10, including the above 7 patients, had the diagnoses made in less than three years—29.4 per cent.

6 patients had the diagnosis of cancer made three to five years later—14.5 per cent.

19 had the diagnosis made after five years—55.9 per cent.

Plotted on a scale as Herold(18) and Waldeyer(19) have done the following graph results:

PERCENTAGE OF CASES OCCURRING AFTER VARIOUS INTERVALS FOLLOWING SUPRAVAGINAL HYSTERECTOMY



These authors feel that the high incidence within the first three years is due to "false carcinoma of the stump". It is probable that for the most part this is true, but the absolute proof is lacking.

Biopsies were performed at Duke Hospital, or a reliable report was available, in 26 instances. All were squamous cell carcinoma except one adenocarcinoma. The patient, a colored nullipara, had a supravaginal hysterectomy nine years previously for a fibromyoma at Duke Hospital. Two patients are known to have had either a cauterization or plastic procedure twelve years and six years before the diagnosis of carcinoma.

This study throws no light whatever on the relative merits of supravaginal and total hysterectomy. The severity of the threat of carcinomatous degeneration of the stump can be evaluated only by tracing the patients that have undergone supravaginal hysterectomy. Scheffey(14) has done this in Philadelphia and found an incidence of one per cent. Since this method is very difficult, the method of Dor(2), Haun(20) Herold(18), Meigs(13) and Stark(3) of inferring the incidence of carcinoma of the stump from studies of the population of a hospital or group of hospitals is valid. Comparing the number of supravaginal hysterectomies with the number of patients admitted with carcinoma of the stump, they obtained the following ratios:

	Per Cent
Dor (Marseilles) - - - -	**0.64**
Haun (Altona) - - - - -	**0.52**
Herold (Jena) - - - - -	**0.60**
Meigs (Boston) - - - -	**0.73**
Stark (Berlin) - - - - -	**1.23**

Certainly supravaginal hysterectomy is a more rapid and easy procedure. The question cannot be decided in the best interests of the patient by doing routinely either a total or a subtotal hysterectomy. The procedure must be modified for the individual. If the operative procedure proves to be time-consuming and formidable, a supravaginal hysterectomy is preferable. The cervix can be subsequently treated in whatever manner is necessary. If the operator's mortality and morbidity are low (J. P. Pratt of Detroit has reported a personal mortality of 0.5 per cent in total hysterectomy(10)), he is justified in extending the use of the more radical procedure. It is helpful to prepare the vagina of every patient about to be subjected to hysterectomy so that the total operation may be carried out if feasible. The cervix should, of course, be most carefully examined preoperatively in every instance, and biopsy freely employed. The threat of malignant degeneration of the cervix is not serious enough to warrant endangering the patient's welfare by adding excision of the

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18. Herold, K.: Berechtigt die Moglichkeit des Auftretens eines Stumpfkarzinoms zur Ablehnung der supravaginalen Uterus amputation? Zentralbl. f. Gynak. 57:108-113 (January 14,) 1933.

19. Waldeyer, L.: Das Cervixstumpfkarzinom nach supravaginaler Uterus amputation, Zentralbl. f. Gynak. 58: 35-44 (January 6) 1934.

20. Haun, K.: Beitrag zur Frage des Stumpfkarzinoms, Monatschr. f. Geburtsh. u. Gynak. 95:91-95 (August) 1933.

cervix to an extensive operative procedure. Colored patients, with their large myomata, extensive inflammatory processes and varied vaginal flora, are poorer candidates for total hysterectomy than white. All patients must be instructed as to the necessity of periodic examinations following any sort of hysterectomy, and should be made to understand that bleeding of any sort is dangerous. This again is less of a problem among private patients than among ward patients. In Duke Hospital all the patients with carcinoma of the stump were ward patients.

Abstract of Discussion

Ledyard DeCamp, M.D. (Fayetteville): The findings presented in Dr. Pearse's paper are extremely interesting for the light they shed on the number of cervical stump carcinomas in relation to the total number of cervical carcinomas appearing in the Duke Clinic and Hospital. As the patients came from such a wide area, no conclusions can be drawn as to incidence with respect to geographic distribution, race, or environment; nor have we any basis for determining how many cervices left after supravaginal hysterectomy become the sites of malignant growths.

The most pertinent question is this: What should be done with the cervix when hysterectomy is being performed for a fibromyoma or other nonmalignant uterine pathology?

A badly diseased cervix should always be removed if the condition of the patient and the experience of the operator warrant the increased risk. Removal of the slightly diseased cervix should be resorted to only by surgeons of extensive experience. There is no evident reason why the healthy cervix should be removed routinely; for it is doubtful if any man can do complete hysterectomies year in and year out with as low an operative mortality as that incident to the supravaginal removal. Men of limited experience will do well to leave the cervix in difficult cases even though it is diseased; it can be kept under observation and removed or cauterized very easily from below at a later date. On this point one notes that all the stump carcinomas in Dr. Pearse's Duke series were found in ward cases. They are the patients who often neglect to return for periodic examinations, and who fail to notice or report early symptoms. When they do present themselves, they fall into the category of advanced cases, for whom little can be done.

Dr. W. L. Thomas (Duke University): First of all, I want to commend Dr. Pearse for the study which he has made.

Gynecologists don't agree yet as to whether a subtotal hysterectomy should be done for fibroids. I feel that the total hysterectomy is the best procedure. I know that will provoke an argument. However, I was with Dr. Pratt for a year, who reports .5 per cent mortality with complete hysterectomy, and I don't believe that such a low mortality can be had with the subtotal hysterectomy procedure.

I notice that Dr. Pearse did not give us the salvage from carcinoma of the cervical stump. The salvage, as far as I can judge from the literature, is only 5 to 14 per cent. Even if it is recognized early, the management of a carcinoma of the cervical stump with irradiation therapy is much more difficult than a straight carcinoma of the cervix, where the uterus serves for screening purposes.

The measurement of that cervical stump is important when you use your rating. In a recent article Curtis stated that he is removing the cervical stump either before or after irradiation therapy because his results from irradiation therapy alone have been so uncertain.

I can't agree with him on that. I still think that carcinoma of the cervical stump should be treated with irradiation therapy.

We have recently found there is one advantage where the stump is small, if you use vaginal cone x-ray, or transvaginal x-ray therapy. In other words, instead of using six portals, two lateral, two anterior, and two posterior, we use seven, one through the pudendal root, shooting directly through that to the cervical stump.

Dr. H. B. Haywood (Raleigh): One suggestion I would like to make is that we probably should keep in mind a vaginal hysterectomy. Unless the fibroids are too large, or the pelvic condition is too extensive a vaginal hysterectomy usually lowers the mortality as compared with a supravaginal hysterectomy done from above.

Chairman Tayloe: Is there any further discussion of Dr. Pearse's paper? If not, I will ask Dr. Pearse to close the discussion.

Dr. Pearse: I have little to add. I think that a vaginal hysterectomy for myoma, particularly if the patient has any adnexal disease, is rather a formidable and difficult procedure. At least it is for me. I believe that each case must be individualized, as I have said here. If you attempt to do, routinely, a total hysterectomy on every case, or routinely, a supravaginal hysterectomy, you are bound to get into difficulties. The only sensible way to solve the problem is by treating each case as a peculiar problem. I agree with Dr. Thomas. I believe that the indications for total hysterectomy should be extended, and I agree with those who say that some degree of training is necessary before a gynecologist starts performing total hysterectomies routinely. I have seen some unfortunate results from total hysterectomies done by inadequately trained people.

DIABETES MELLITUS

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Lincolnton

Diabetes mellitus is an ever present clinical problem and enemy of man; and there is little likelihood of its being talked or written about too much for a long time. There are 400,000 diabetics in this country. The incidence is increasing. Statistics show that about 2.08 per cent of the present population may be expected ultimately to die of it. The mortality is about twice as high in females as in males, and higher for whites than for negroes. The disease is increasing faster in urban than in rural areas. It is tremendously more frequent in fat people and Jews. It is more common in the so-called "higher" social brackets.

Until quite recently, we confidently said

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that diabetes was caused by degeneration of the islands of Langerhans. Now we are not so sure that this is the whole truth. Some go so far as to say that primarily the pancreas has nothing to do with the cause of diabetes. F. G. Young, working in England —and his work has been confirmed by Campbell and Best in Toronto—produced permanent diabetes experimentally by the injection of anterior pituitary extract. Others have caused an alleviation of the disease by irradiation of the anterior pituitary body.

Whatever may be the theoretical considerations as to its etiology, incidence and pathology, the most important known fact about the pathological physiology of diabetes is the inability of the body to metabolize carbohydrates, or the lack of ability to metabolize a sufficient amount for normal body needs. The islet cells manufacture insulin, which is necessary for the conversion of carbohydrate food into body tissue after it has reached the blood stream. We do not know what happens to make them stop manufacturing insulin. The islet cells are not destroyed, and microscopic evidence of degeneration is slight. Boyd states that the only abnormality in a diabetic pancreas is the absence of granules in the beta cells of the islets; and the pancreas must be examined within two or three hours after death to find even this.

As a result of the diminished insulin supply, a train of symptoms becomes evident, recognizable as a disease entity. The picture varies in different cases, owing among other things to the degree of the insulin want, the differences in the ability of the body to adjust itself to the disordered metabolism, and the presence or absence of complications; however, polydipsia, polyphagia, polyuria, weakness and loss of weight are usually present. In my experience, weakness is more constant than any of the other symptoms. Pruritus, especially pruritus vulvae, increased susceptibility to infection, abdominal pain, gangrene, dizziness, and headaches are often found, upon investigation, to have a diabetic background. Infection frequently brings out a diabetes not previously suspected. Sometimes, glycosuria is found in routine examinations, when the patient has had no symptoms. Blood sugar higher than normal confirms the diagnosis.

Diabetics get better and worse at times, without apparent reason. I am not speaking here of the exacerbation of the disease by infection. I have patients who need insulin part of the time and who at other times seem able to eat almost anything with impunity. Perhaps the amount of exercise, which we know has an effect on carbohydrate metabolism similar to insulin, has something to do with this.

Although I have been practicing medicine for nine years, I feel that I have really been treating diabetes for the past three years only. Of course I recognized the disease before that time, and attempted to treat it. I feel that one man died from improper handling. One week after that death, I was in Boston with Dr. Joslin. I found that my conception of the complexities of diabetic treatment was largely false. The methods they used there were, contrary to my previous conviction, very simple. Now, I can honestly say that I genuinely enjoy treating diabetes. There is nothing in my medical practice which is more completely satisfying than to see these patients respond to the proper care.

During the past three years, I have often said that there is no reason why a diabetic cannot live just as long, feel just as good and work just as hard as a non-diabetic, provided the disease is discovered reasonably early when no complications exist, and the proper treatment is given and continued. Neither do I think there is any excuse for a patient dying in diabetic coma. It has not been long since I would have laughed at such statements. I want to make it perfectly clear that I am referring to the diabetic who has been treated properly and who thoroughly cooperates with the treatment. I am not referring to the neglected diabetic who is first seen by the physician in coma.

If a patient is found to have glycosuria, with or without symptoms of diabetes, one or more blood sugar determinations must be made to establish the diagnosis. Every person whose urine shows a positive Fehling or Benedict test does not have diabetes. For example, pregnant women sometimes show positive tests from lactosuria, and there is no proof that these women are any more apt to develop diabetes later than the average person. Statistics of the Joslin Clinic reveal that approximately 15 per cent of nearly 15,000 patients examined there whose urine was positive for sugar were not diabetic. Renal glycosurias account for some, and there are about ten sugars other than glucose which will cause positive Fehling and Benedict tests.

In making a diagnosis of this disease, I think there is too great a tendency to depend on one blood sugar determination. It is quite possible for one determination in a borderline case to be below the accepted upper limit at the time the test is made, thus incorrectly leading to the conclusion that the patient has not the disease.

Also I believe there is too much tendency to make *only* fasting blood sugars. They do not give a completely accurate picture of the patient's status from time to time during the day and night under his actual living conditions. We have to treat the patient during the whole twenty-four hours, and not just for a short period before breakfast each morning.

A fasting blood sugar should be made on blood collected at least twelve hours after the patient has ingested food. Just before breakfast is usually the most convenient time for making the collection. If such a fasting blood sugar test made on venous blood shows 140 mg., or more, of glucose per 100 cc. of blood, the patient is diabetic. When blood sugar determinations are made on capillary blood by the micro method, values of about 20 mg. higher per 100 cc. are found, all other things being equal. We use the micro method in cases in which blood sugars must be done so frequently that the loss of blood may be detrimental to the patient.

Cases of diabetes mellitus may be classified in three ways: according to whether they are acute or chronic; mild, moderately severe or severe; simple or complicated.

The basis of the treatment of diabetes is regulation of the diet. Insulin is necessary in moderately severe or severe cases. Prior to the introduction of insulin into medical practice in 1922, only dietary treatment was available, which was far from adequate to control most cases. The basic idea before insulin was rigid restriction of carbohydrates. Since insulin, restriction of carbohydrate intake has not been necessary, but the carbohydrate restriction ideas of pre-insulin days have died hard. Even now, eighteen years after insulin was first used clinically, many physicians still restrict carbohydrate intake—in some cases to the point of carbohydrate starvation — to the great detriment of the patient.

The average adult non-diabetic consumes in twenty-four hours an amount of food representing from 1000 to 3000 calories. The ratio of carbohydrates, protein, and fat in a balanced diet is roughly 10: 5: 6, in grams. The diabetic should have the same caloric intake and the same ratio of basic foods as the non-diabetic. This statement may be surprising to some, but on close examination, the logic of it can be seen. A healthy man, doing a job which requires the expenditure of a certain amount of energy, automatically selects a diet very close to the above outlined normal diet, if adequate food is available. If this man develops diabetes, he becomes unable to do the work he has been doing, because even though he eats the same amount and kinds of food, he cannot properly use it in his body, because his metabolizing machinery is disordered. Insulin in adequate amounts is necessary to restore his metabolism to smooth working order, and the insulin given him by needle is as efficient as that which came from his pancreas before he got sick. Formerly we erroneously thought that restriction of carbohydrates in a diabetic spared the pancreas, already damaged, from imagined overwork. We now know that this idea, while theoretically attractive and logical at first glance, is not valid in actual practice. Therefore, the diabetic should have a normal diet, including the same amounts of carbohydrate, protein and fats that he ate before he got sick. This is necessary if we expect to restore him to his former vigor, weight, and sense of well-being. He should be allowed his normal diet, and then given the amount of insulin necessary to keep his urine sugar free and the blood sugar between 100 and 170. One very important thing which remains is to regulate his diet so that he eats the same amount of food every day—not the same food, but the same amount of food value.

The so-called high carbohydrate diet, which I prefer to call the normal carbohydrate diet, in some way, over a period of time, increases the patient's sugar tolerance. Patients eating a normal carbohydrate diet usually require, in course of time, less and less insulin. This phenomenon is not seen, or occurs to a much less extent, in patients who are allowed very small amounts of carbohydrates. No adult diabetic should ever be given less than 100 gm. of carbohydrate per 24 hours, and seldom less than 150 gm. One hundred grams of carbohydrate is contained in ten average oranges, or twenty soda crackers, or about 500 gm. of Irish potato. A normal carbohydrate intake is necessary for maintaining the diabetic's nutrition. There is far less likelihood that diabetics on a normal carbohydrate diet will later develop stenosing vascular disorders, such as gangrene and angina pectoris, than is the case with diabetics on low carbohydrate intake. Undiagnosed diabetics, whose diets have been high in carbohydrate, have been thrust into coma when they were suddenly put on very low carbohydrate, with a high fat intake. It is much easier to handle patients when they are given normal amounts of this energy food. The temptation to eat forbidden sweets is removed, and they are happier from every standpoint.

At the Joslin Clinic I discovered a diet card which solves the problem of diet for diabetics. On it is printed the outline of six diabetic diets, ranging in value from 1137 to 2307 calories. The carbohydrate in these diets ranges from 100 to 200 gm., the protein from 47 to 100 gm., and the fat from 61 to 123 gm., per 24 hours. The diets are designated numerically. Reading to the right are the translations into actual food. For example, the ration in diet No. 5, containing 2307 calories, is 300 grams of 5 per cent vegetable, 400 grams of orange, 240 grams of oatmeal (cooked), 210 grams of Irish potato, 120 grams of bread, 240 grams of milk, 1 egg, 180 grams of any meat minus its fat, 30 grams of bacon weighed after it is cooked, 120 grams of 20 per cent cream and 45 grams of butter. This amount of food is divided into three meals, according to the reasonable desires of the patient. On the card are found lists of 5, 10, 15 and 20 per cent vegetables, any of which may be substituted to give variety, while maintaining the same food value. Various fruits, and even sugar, may be substituted for the orange allowance, and the equivalents for substitution are given in such a way that this may readily be done with the simplest arithmetic. It is easy to explain the diet card to patients, and easy for them to follow it.

I consider it essential for good regulation and control that every patient have and use a diet scale. I do not consider it impractical to insist on this, and yet I frequently have doctors tell me that it is. I buy the scales in dozen lots, and pass on the better price to the patient.

Most of my patients are amazed when they find that I allow sweets and starches, and even sugar, but they are all pleased and feel better on liberal carbohydrates.

When diabetes has been discovered, I think the patient should be sent to the hospital for a week or ten days for regulation and instruction, although hospitalization is not absolutely necessary. Patients observe the preparation and weighing of their diet in the hospital kitchen, and learn to test their urine in the laboratory. If insulin is required, they are drilled in the technique for administering it. Two blood sugar tests are done on them each day—one just before breakfast and the other just before supper—and these serve as the main guide in regulating the diet. Their twenty-four hour urine output is collected in four periods, morning, afternoon, evening and night. These specimens are examined separately, and the patients are taught to continue doing this after they return home. They are given extensive instruction about their disease, including information to enable them to recognize coma and shock. The symptoms of insulin reaction may differ so widely in different people that I purposely give patients a mild insulin reaction while they are in the hospital. This can be promptly controlled and it teaches them more about the recognition of insulin reaction than hours of instruction or reading. Also, if they later get a reaction, they are not so frightened and not so apt to lose their heads.

There are various methods for determining the amount of food a diabetic should have. In my opinion, the many methods and formulas for evaluating separately many of the factors which influence a person's metabolism, and for predicting with a high degree of precision his fuel requirements are for the most part unnecessarily elaborate. Such accuracy in the prescription of the food presupposes similar accuracy in the preparation and consumption, conditions which are next to impossible of attainment except with the aid of a specially equipped diet kitchen and an ideal patient under ideal conditions. Furthermore, people of the same age and weight and in the same occupational category may differ widely in their food requirements.

My practice is to pick from the diets on the diet card the one roughly estimated to fit the case, and start the patient on it. From then on, the patient's sense of well-being, his strength and weight, and his appetite are the sign posts which govern the raising, lowering and adjustment of food intake. Bear in mind that each of these diets provides for adequate amounts and proportions of food materials. This may seem too simple to be true, but it works, and has proved successful in the hands of men whose experience is much greater than mine.

When beginning treatment, I do not try to determine the patient's carbohydrate tolerance. After the patient has been on his diet for a day or two, and some idea of the blood sugar level has been obtained, insulin is begun, if necessary, and continued in sufficient amount to maintain the blood sugar between 100 to 170. The diet is changed from time to time, if and when necessary, according to the principles laid down above. There is no exact rule for pre-determining the correct insulin dose. This must be discovered by trial and error.

There are exceptions to the above procedure. For instance, I am not referring to coma cases, which are acute emergencies, and must be dealt with quickly according to a different plan. Uncomplicated cases, hospitalized for regulation, are usually started on 10 to 20 units of insulin, and gradually worked up to the correct maintenance dose. Special care and watchfulness must be used in raising the insulin dosage, especially when protamine insulin is used, since the blood sugar curve usually has a fashion of remaining near the same high level for several days after treatment has been begun, and then suddenly breaking to a lower level, perhaps to shock levels.

For the past three years, I have used protamine zinc insulin almost entirely. This preparation is a mixture of regular insulin with a very simple fish sperm protein. The difference of its action from regular insulin is due to its slower absorption. The insulin in the mixture is slowly liberated from the protein, so that it is not completely removed from the point of injection for from twenty-four to thirty-six hours. This steady stream of insulin which pours into the system during the whole twenty-four hours of the day simulates the way in which the pancreas supplies insulin in normal health. The total amount of insulin required for twenty-four hours may be given in one dose, when protamine insulin is used. Shock from protamine insulin differs from regular insulin shock owing to the different speed and manner in which it is absorbed. One dose of orange juice or sugar usually will completely and permanently relieve shock from regular insulin, but may have to be repeated several times in protamine insulin shock.

It is not wise to change arbitrarily to protamine people who have been successfully using regular insulin for a long time, especially if they are old. If they are doing well and are thoroughly accustomed to the action of regular insulin, the change may be stormy. Old diabetics find it especially hard to readjust their routine. I think the patient should make the change in the hospital, especially if he is old. When changing from regular to protamine insulin, I usually give in one dose once per 24 hours three-fourths of the number of units of regular insulin the patient has been taking, and work up or down from that.

I have said nothing about diabetic surgery, which is a big field in itself. A large book could be written on the handling of the complications of this disease. Diabetics can now be carried through almost any surgical procedure almost as safely as non-diabetics. Diabetic women can now have children with reasonable safety. The prognosis in surgery on gangrenous and infected diabetic extremities is not nearly so dark now as formerly.

The final thought I wish to leave is that whoever treats diabetes should make sure he is willing to take the time necessary to do it right. It requires a tremendous amount of tedious detail work. The diabetic who knows most about his disease gets along best. If the doctor is too hurried or impatient, the patient suffers. Your efforts are largely lost if the patient does not thoroughly understand what to do after he is removed from your direct supervision.

Because tuberculosis is found 13.5 times as often in families of known cases as in the general population, we should look for tuberculosis in the homes of persons who have it. Crusader, May, 1940.

SULFAPYRIDINE THERAPY IN LOBAR PNEUMONIA, WITH SPECIAL ATTENTION TO COMPLICATIONS

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This paper is based upon a series of forty-one cases of lobar pneumonia treated with sulfapyridine on the medical service of Watts Hospital, Durham, N. C. The series extends from the time the drug was first introduced here on January 27, 1939, to March 1, 1940. The purpose is to summarize the complications encountered, dosage required, and the success of the treatment.

Only those cases were selected where the diagnosis of lobar pneumonia was confirmed by x-ray. Attention was directed to the type of organism, but the survey includes the cases where no sputum was obtained, or where mixed organisms were found. In several cases other forms of therapy—namely, sulfanilamide and serum—were employed, but these cases are included, since in a measure they serve to act as controls upon the effectiveness of this form of therapy.

Attention is directed primarily to the amount of sulfapyridine prescribed and to the time interval between administration and the fall of temperature to normal. Consideration is given also to any effect of the drug on the blood, specifically the hemoglobin and the white count. Special interest is directed to the atypical cases, and those where concurrent medical conditions were known to exist.

The ages of the patients ranged from thirteen to sixty-six years. The series includes 2 deaths and one case in which sulfapyridine was apparently ineffective.

The average dose administered was 16.5 Gm. per patient. The greatest amount given was 43 Gm.; the smallest effective dose was 7 Gm. In 8 cases cures were effected with 10 Gm. or less. In 12 cases the temperature fell to normal in twelve hours and remained so.

A positive blood culture was obtained in only one case, and this patient died. All other blood cultures were reported negative. Blood sulfapyridine level determinations were not made frequently enough to be of any conclusive value.

As to the infectious agents, pneumococci were isolated and typed in 23 cases. Types I and II were most prevalent, each being present in 7 cases.

Two patients in this series expired during the course of active specific treatment.

Case 1. A white male, aged forty-two, was moribund upon admission. There was a history of unsuccessful treatment in a nearby city during an eleven day course of illness. Major portions of both lungs were involved with lobar distribution as indicated by x-ray and physical findings. Blood culture was positive for pneumococci Type VII. Fourteen grams of sulfapyridine were given orally in a twenty-four hour hospital course with fatal termination.

Case 2. A white male, aged fifty-nine, was admitted, with a diagnosis of lobar pneumonia. Physical examination and x-ray findings showed that practically the entire right lung was involved. The sputum was found to contain pneumococci Type XVII. The leukocyte count was 2,950, with 40 per cent polymorphonuclear cells. The admission temperature was 105°F. The patient could not give an accurate history as to the duration of the illness. There was a history of chronic alcoholism over a long period of time, and the patient was intoxicated at the time of admission. The dosage of sulfapyridine was $9\frac{1}{2}$ Gm. during the forty hour hospital period. The patient died.

Complications arising in connection with administration of sulfapyridine in this series have been observed and listed. In some of the cases opinion varied as to whether these complications were coincidental or directly based on an untoward sulfapyridine action.

Nausea was noted in all but a few cases. In no case was it severe enough to cause omission of sufficient dosage. Even in cases where records indicated that the patient had vomited the greater portion of each dose over a one or two day period, the therapeutic result did not seem to be altered. The administration of barbiturates by rectum one hour before each dose during the periods of nausea and vomiting was found to be helpful, especially if the sulfapyridine tablets were pulverized and given in one ounce of liquid.

We emphasize the following cases in order to clarify the more common gastro-intestinal complications.

Case 1. A white male, aged forty-four, came in with a history of gastro-intestinal disturbances of two days' duration, with nausea, vomiting, and epigastric pain. There were no respiratory complaints. There was marked tenderness of the entire right abdomen, and some rigidity. Physical findings in the chest were not definite. The temperature was 100°; the leukocyte count was 13,000, polymorphonuclears 90 per cent. An x-ray diagnosis of lobar pneumonia involving the right upper lobe was made. The temperature increased in the next twenty-four hours to 105°. Sulfapyridine therapy was begun and there was a typical drop in temperature within eighteen hours. A total of 8½ Gm. of sulfapyridine were given. X-ray showed clearing, as did the blood picture. A gastro-intestinal x-ray series made later was negative. The administration of sulfapyridine in this instance was entirely by the oral route, and the gastro-intestinal symptoms subsided progressively during the course of the treatment.

Case 2. A white male, aged sixty-three, was admitted to the hospital with right middle lobe pneumonia of thirty-six hours' duration. Sulfapyridine therapy was begun immediately, with excellent therapeutic result. Extreme nausea, vomiting, and marked gaseous distention occurred abruptly on the third hospital day. With the appearance of these symptoms there was a return of the leukocytosis, which had disappeared under the influence of specific therapy. Sulfapyridine therapy was continued, and the symptoms subsided in thirty-six hours.

Temperature curves were not in every case typical but this did not indicate a poor therapeutic result.

Case 1. This patient presented a classical picture of right middle lobe pneumonia of thirty-six hours' duration, with a pseudocrisis at twelve hours. A return of the original febrile picture occurred and was maintained for over twenty-four hours; then there was a fall in temperature. The cause of this was not ascertained, but it did not affect the final therapeutic result, which was excellent.

Case 2. This showed a classical picture of lower right lobe pneumonia of three days' duration. Sulfapyridine therapy was begun at once upon admission, and seventy-two hours elapsed before the febrile crisis. This crisis was real, and the final result was excellent. A total of 16½ Gm. of sulfapyridine was given.

Case 3. There was a typical picture of lobar pneumonia, with a satisfactory twelve-hour response to sulfapyridine. A low grade temperature was present from the fourth to the twelfth day, inclusive. The patient was cured. No explanation for the subsequent temperature was found.

Variations in the blood picture were studied and an attempt has been made to classify them. In the cases where sulfapyridine response was typical, the leukocytosis and high percentage of polymorphonuclear cells dropped within twenty-four to seventy-two hours. Leukopenia occurring during active treatment was noted in one instance.

Case 1. A white female, aged thirty-three, gave an indefinite history of upper respiratory infection for four days preceding admission. Physical findings on admission were not definite. The temperature was 100.8°. An x-ray diagnosis of right lobar pneumonia was made. The leukocyte count was 20,400, with 95 per cent polymorphonuclears, at the first examination. On the fourth day the white cell count was 4,450, and patient was irrational and very toxemic in appearance. Sulfapyridine was continued, with a reduction in the dosage to 11 Gm. per day. The patient recovered. The white cell count increased to 8,000 before treatment was finished. No transfusions were given in this instance. The patient received a total of 18½ Gm. of sulfapyridine.

Complications in the urinary tract were observed during the course of treatment in three cases.

Case 1. A white female, aged forty-three, was admitted with early right middle lobe pneumonia. The usual result was observed in giving a total of 16½ Gm. of sulfapyridine. Many leukocytes (with clumps) were noted in the urine on the initial examination, and this finding persisted during the course of active treatment. The patient was symptomless and afebrile on dismissal and the urine was clear.

Case 2. A white male, aged forty-six, came into the hospital with an extensive involvement of the left lung with lobar distribution. Type II pneumococci were isolated and identified in the initial sputum examination. The patient was jaundiced on admission and was desperately ill. The icterus index was 70. The urine showed a definite trace of albumin, a few leukocytes, and an occasional hyaline cast on admission, and these findings remained practically the same throughout the course of the illness. The response to 22½ Gm. of sulfapyridine was typical. Treatment was stopped on the fifth day, and a rise of temperature and reappearance of the leukocytosis were noted on the eighth day. This required reinstitution of specific treatment, with the administration of 21 Gm. of sulfapyridine. On the thirteenth day the patient developed anuria for eighteen hours. He had been afebrile for thirty-six hours following the second crisis. Sulfapyridine was then stopped and intravenous fluids were administered, with subsequent disappearance of the untoward symptoms. The blood chemistry was not altered, and the urine did not show subsequent infection. A total of 43½ Gm. of sulfapyridine were given over a twelve day period.

Case 3. This case of urinary infection was noted in a case of lobar pneumonia with a leukopenia. On the third and fourth days of treatment the patient had many erythrocytes in the urine. Many leukocytes were present in both specimens. Low back pain was noted at the same time. These findings cleared without special treatment or management. Sulfapyridine was continued to 18½ Gm. with no recurrence of symptoms.

Resistance to sulfapyridine therapy was noted in three cases in our series.

Case 1. A white female, aged thirty-eight, ran a classical twenty-four hour course. She had a left lower lobe pneumonia, and the sputum showed Type I pneumococci. One hundred and twenty grains of sulfanilamide were given in the first twenty-four hours of the hospital course, and 80,000 units of Type I serum were given by the end of the first day. The temperature dropped to 101° and remained there for the ensuing forty-eight hours. At the end of this time sulfapyridine therapy was begun. The temperature receded to 100° after 7½ Gm. of sulfapyridine. After this no medication was given for a seven day period, during which the temperature was 100° to 101°. X-ray diagnosis at this time was bilateral bronchopneumonia. The temperature dropped to normal and the patient recovered.

Case 2. A white male, aged fifteen, was admitted with left upper lobe pneumonia of twenty-four hours' duration. The sputum showed pneumococci, Type I. This patient was treated with 15½ Gm. of sulfapyridine over a four day period. There was no fall in temperature until this medication was discontinued. The percentage of polymorphonuclears was reduced somewhat during the course of the treatment, but not to the degree usual in these cases. On the fifth day (the day following discontinuation of specific therapy), the patient appeared very toxemic and was nauseated. A transfusion was given at this time. A series of x-ray films showed the pneumonic process resolved by the tenth day. There was no evidence of other infection.

Case 3. A white female, aged twenty, had had right lower lobe pneumonia of twelve hours' duration upon admission. The sputum was negative for pneumococci. Twenty-two grams of sulfapyridine were given over a seven day period. The temperature spiked to 100° from the fourth through the eleventh day. At the time of admission there was a suggestion of some fluid being present, and and x-ray showed an accumulation of fluid in the right lower chest. The amount increased, and on the eleventh day 500 cc. of straw-colored fluid was removed. Culture of the fluid was negative. The patient then made an uneventful recovery.

Pulmonary symptoms as indicated by physical examination and x-ray findings cleared as the lungs and leukocyte count returned to normal in most of the cases. The following are three exceptions:

Case 1. A white female, aged forty-seven, was admitted with right upper lobe pneumonia of twelve hours' duration. She had a crisis after a twenty-four hour course of sulfapyridine therapy. Subsequent x-ray findings indicated that the process was clearing, until the ninth day of treatment. An x-ray film made at this time, two days after completion of a course of 34 Gm. of sulfapyridine, showed some atelectasis. An x-ray made six days later showed that this had cleared up.

Case 2. A white male, aged twenty-three, was admitted with right middle lobe pneumonia of four days' duration. Type XI pneumococci were identified. A crisis occurred after twelve hours and a total of 9 Gm. of sulfapyridine were administered over a period of forty-eight hours. Three days following the discontinuation of sulfapyridine therapy, x-ray films showed approximately 100 cc. of fluid in the right chest. The temperature was spiking to 100° at this time. Ten days later an x-ray film showed consolidation of the lower third of the right lung, and fluid up to the apex. The patient was afebrile at this time, and was discharged. Two Wassermann tests showed a four plus reaction. The question here was whether incomplete treatment or syphilis was the basis for the poor therapeutic result.

Case 3. A white female, aged sixty-three, was admitted with right middle lobe pneumonia of thirty-six hours' duration. After thirty-six hours of treatment, a crisis occurred. Twenty-six grams of sulfapyridine were given over a five and a half day period. From the seventh to the twelfth day the temperature rose daily to 100°. An x-ray on the eleventh day showed a collection of fluid between the middle and lower lobes on the right. The temperature dropped a few days later, and subsequent x-rays showed clearing of the process. Poor absorption of the drug may be considered as a possible cause of this complication, for this patient suffered from nausea and gaseous distention over a three day period during the course of treatment. If this supposition is true, this case is the exception rather than the rule.

Intercurrent disease is not necessarily a contra-indication for sulfapyridine therapy.

(1) *Cases with cardiac complication.*

Case A. A white female, aged sixty-six, was admitted with a history of hypertension and marked decompensation of four weeks' duration. The patient had been stuporous for three days prior to admission. The blood pressure was 240 systolic. Right lower lobe pneumonia was diagnosed by x-ray. The leukocyte count on admission was 21,200, with 94 per cent polymorphonuclears. The temperature was 104°. Twelve grams of sulfapyridine were given orally over a period of three days. The temperature came down twenty-four hours after sulfapyridine was begun. Digalen was given. The patient recovered.

Case B. A white male, aged forty-five, was admitted with lower right lobe pneumonia of approximately four days' duration. There was a history of rheumatic fever at nineteen years, with tonsillitis, rheumatism, and a mitral lesion. The mitral lesion was found on admission, but there were no signs of decompensation. Twelve grams of sulfapyridine were given over a three day period. The patient had a twelve hour temperature crisis and made a very satisfactory recovery.

(2) *Case complicated by otitis media:* A white female, aged thirteen, was admitted with lower right lobe pneumonia of approximately twenty-four hours' duration. She had had otitis media for five days, and the ear was draining profusely on admission. A culture of the drainage showed staphylococci. The sputum showed pneumococci, type I. Ten and three-fourth grams of sulfapyridine were given over a two and a half day period. There was a twenty-four hour fever crisis, and an uneventful clearing of the pneumonic process and of the otitis media.

(3) There were two cases of pneumonia complicated by lues, which are not described here. Luetic treatment was continued uninterruptedly. The patients reacted promptly to sulfapyridine.

(4) *Case complicated by pregnancy.* A white female, aged thirty, six months pregnant, entered the hospital with an uneventful prenatal record up to this time. She had lower lobe pneumonia, with a temperature of 103°, and a white cell count of 14,500, with 97 per cent polymorphonuclears, on admission. Approximately twelve hours after admission the patient developed uterine contractions. She was given 30 gr. of sulfanilamide, and eighteen hours after admission she was started on sulfapyridine therapy. She was given 11½ Gm. over a two and a half day period, with a good therapeutic result. An interesting feature was the cessation of the labor pains after thirty-six hours of sulfapyridine therapy. The patient was discharged, and was followed in the out-patient department as a prenatal case. She was readmitted at term and was delivered of a normal baby.

Summary

As a result of this study the following points seem to be established:

1. Sulfapyridine is an effective agent in treating lobar pneumonia, and appears more effective than any previous form of therapy used in this hospital.
2. The dosage need not be large, as results are equally satisfactory in those cases receiving minimal doses.
3. In only one case did the drug fail to

effect a complete cure where it was given a satisfactory trial.

4. Nausea was a persistent and expected symptom with this form of therapy. By no means should the dosage be discontinued because of this symptom. The administration of barbiturates by rectum is an effective means of allaying nausea. Sulfapyridine may be given in spite of gastro-intestinal upsets.

5. Many cases respond in twelve hours, but delay up to seventy-two hours is apparently of no significance. With one possible exception, no febrile reaction to the drug was observed in any of the cases studied.

6. In those cases where sufficient data are available, the hemoglobin and red cell recordings were not affected in a significant manner. The only case of leukopenia responded without additional therapeutic measures, and sulfapyridine therapy was continued in spite of the findings.

7. Urinary complications were not frequent and did not constitute sufficient cause for discontinuance of therapy, except in one case.

8. Resistance to sulfapyridine therapy was noted in only three cases. In two of these, treatment was complicated by other forms of therapy.

9. Pulmonary findings as indicated by x-ray and physical examination cleared up parallel with the temperature and leukocytosis.

10. Associated conditions such as hypertension, decompensation, senility, rheumatic fever, lues, and pregnancy were unaffected by the drug.

The Aim of Chemotherapy.—The aim of chemotherapy is to be able to treat diseases with chemical substances capable of selectively destroying disease promoting agents without doing serious injury to any vital part of the human organism. This will be difficult to accomplish. It may never be fully realized. Living organisms, simple and complex, microbe and man, possess certain characteristics shared in common by all living things. They have the capacity to assimilate, to grow, and to reproduce. The cycles of events characterizing these processes in microbe and in man may involve similar phenomena. The drug which affects the protoplasm of the parasitic agent may not be wholly without toxic effect on man. If it were it would be in general ineffective as a therapeutic agent. It is a matter of degree of toxicity for each. The problem is to find chemical substances which will destroy the agents of infection, **in vivo**, in concentrations so low as to be practically harmless for the human organism. — M. L. Crossley: Recent Advances in Chemotherapy, Science, 91:370 (April 19) 1940.

THE DIAGNOSIS AND MANAGEMENT OF CHRONIC ECZEMATOID DERMATITIS OF THE HANDS

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and

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The diagnosis and management of chronic eczematoid dermatitis of the hands is one of the most frequent problems with which the dermatologist is confronted, and often proves to be one of the most difficult. This problem also concerns the general practitioner and the practitioner of internal medicine.

Occasionally, the etiological diagnosis in a case of chronic eczematoid dermatitis of the hands is as difficult to determine as is the proper course of treatment in some of the more resistant cases. We wish, however, to stress the importance of making an etiological diagnosis, since it may mean the difference between a good and a poor prognosis, and between good and ill-directed therapy.

For purposes of a brief discussion, we will divide chronic eczematoid dermatitis of the hands into seven groups:

1. Superficial mycotic infections.
2. Eruptions of an "allergic" nature resulting from a fungus or bacterial infection. These eruptions are designated as "id" reactions.
3. Eruptions caused by external irritants such as Rhus dermatitis and occupational dermatoses.
4. Idiopathic eruptions of the hands, such as pompholyx.
5. Toxic eruptions caused by foods, drugs, etc.
6. Chronic infectious eczematoid dermatitis.
7. Eruptions of the hands which are accompanied by more or less generalized involvement.

The first step in successfully dealing with eczematoid eruptions of the hands is to obtain a thorough history, since this alone frequently leads to a diagnosis of contact dermatitis. The history should be followed by a complete and detailed examination of the patient. After the history and physical ex-

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amination, as Wise and Wolf(1) have stated, a complete investigation of all eczematoid dermatides of the hands may embrace "atophy, allergy, immunology, mycology, biologic chemistry, serology, pharmacology and chemistry."

We shall attempt a brief discussion of the salient features of the seven groups of eczematoid dermatides of the hands.

1. The clinical appearance of superficial mycotic infections is usually quite typical. There is the white, sodden epidermis, the vesicles and bullae, and the dry, fissured, scaling areas. The nails may be involved, and, in general, any nail in a case of chronic eczematoid dermatitis of the hands which lacks luster contains fungi. It should be treated as a focus when an eruption which appears to be an "id" persists after the apparent focus has been cleared up. In all cases in which a fungus infection is suspected, microscopic examination should be done of material removed from lesions and immersed in 10 per cent potassium or sodium hydroxide. As Williams(2) has pointed out, the best specimens for microscopic examination are obtained from the periphery of the lesions, as the vesicles in the immediate vicinity may be sterile and represent "id" reactions. It is frequently necessary to have the patient clean up the areas with soaks or compresses before satisfactory microscopic examination for fungi can be done. In order to recognize the particular strain of the fungus it is necessary to culture the material on Sabouraud's or other media.

2. The group of "id" reactions is by far the most frequent explanation of eczematoid dermatides of the hands. In the dermatophytid group, one finds fungi on the feet but cannot expect to be able to demonstrate similar organisms on the hands. We feel that the trichophytin skin test should be an integral part of the examination; however, a positive test does not necessarily prove the presence of dermatophytid, since the majority of people have had fungus infections of the feet at one time or another, and will show a positive test. As Lewis, MacKee and Hopper(3) have pointed out, a negative trichophytin test in the presence of proven mycotic infection gives a poor prognosis, since this would indicate the absence of antibodies.

Ayers and Anderson(4) have suggested a method by which the presence of a dermatophytid can be definitely established. The method consists of adding serum from a person with a true dermatophytid to Sabouraud's media. This will inhibit the growth of fungi isolated from the primary lesion. Naturally, one would not expect this to hold true unless the trichophytin test were positive. Marchionini(5) has reported the value of estimating the pH concentration of the vesicular fluid. He states that true dyshidrosis fluid will turn blue litmus red, that infectious dyshidrotic fluid is amphoteric, and that dermatophytid fluid will change red litmus to blue.

It is also important to remember that a bacterial focus may produce an "id" reaction.

3. One can usually determine from the history whether or not he is dealing with a contact or occupational dermatosis. If a substance is suspected, then the patient's sensitivity to that substance should be tested by either patch, scratch or intradermal methods. Goodman(6) has stated that a contact dermatitis or a drug sensitivity cannot, as a rule, be investigated by scratch tests. He advises that the practitioner make more use of the patch test. Caution must be observed in doing sensitivity tests, for a patch test not only may induce a "flare up" of a localized dermatitis venenata, but may produce a generalized dissemination, as Sharlet(7) has pointed out. Caulfield(8) has followed individuals susceptible to poison ivy with patch tests and has observed that positive tests become negative following the intramuscular injections of poison ivy extract.

4. Occasionally, one sees a chronic eczematoid dermatitis of the hands which seems to fit into the poorly understood group known as pompholyx or dyshidrosis. These patients are usually of an unstable temperament and tend to be of the neurotic type. Sweating is

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4. Ayers, Samuel J. and Anderson, Nelson Paul: Inhibition of Fungi in Culture by Blood Serum from Patients with "Phytid" Eruptions, Arch. Dermat. and Syphil. 29:537 (April) 1934.
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6. Goodman, J.: The Use of the Scratch Test in Dermatology with Special Reference to Atopic Dermatitis, New England J. Med. 219:705-709 (Nov. 3) 1938.
7. Sharlet, Herman: Routine Patch Tests, Arch. Dermat. and Syphil. 38:951 (Dec.) 1938.
8. Caulfield, A. H. W.: The Specific Diagnosis and Treatment of Poison Ivy (Rhus Toxicodendron) Dermatitis, J. Allergy, 9:535 (Sept.) 1938.

said not to be a special feature. The lesions are preceded by a sense of discomfort, but the actual lesions never itch—a fact which may be of some diagnostic value. The eruptions are symmetrical and appear without antecedent erythema. The vesicles resemble sago grains embedded in the skin and may appear scattered or in groups along the edges of the fingers and in the palms. The vesicles are said to undergo spontaneous resolution without rupture and tend to recur. Muende(9) has pointed out that these patients are usually worried and overworked. McLochlan and Brown(10) believe that approximately 75 per cent of the so-called pompholyx eruptions belong in the eczema-asthma-hay fever group. They found that frequently several members in one family showed similar eruptions. We are inclined to believe that some of the lesions called pompholyx represent "id" reactions.

5. In the recognition of eruptions produced by foods, drugs, etc., the history is of utmost importance. Suspicions should be confirmed by sensitivity tests as described under group 3. If a food is suspected, a food diary may be advisable and an elimination diet necessary.

6. Occasionally, a trivial abrasion is followed by an eczematoid dermatitis of the hands. We interpret this condition as being due to eczematogenous powers of the saprophytic organism, vegetating on the skin, and designate it as an infectious eczematoid dermatitis. Robert(11) has demonstrated the eczematogenous powers of certain strains of staphylococci cultured from secretions of eczematoid dermatitis. Ramel(12) has pointed out that frequently an occupational eczema enters a second stage after the patient has been removed from the offending substance, and he believes this to be response to the saprophytic organisms on the involved areas.

7. Eruptions of the hands which are accompanied by more or less generalized involvement such as pemphigus, erthyema multiforme, syphilis, etc., need not be discussed, since examination will usually show involvement elsewhere.

Treatment

At the beginning, we would like to advise against the indiscriminate use of x-ray therapy. Too frequently, we have seen patients with severe involvement of the hands who had previously received x-ray therapy to the limit of tolerance at a time when the involvement had been minimal and when more conservative therapy would probably have been adequate. In treating conditions of the skin which are apt to recur, such as vesiculopustular eruptions of the hands, we feel that it is wise to withhold x-ray during the early stages, remembering that there may be greater need for the x-ray tolerance at a later date. We agree with MacKee(13) that the majority of cases of dermatophytosis will do better under intelligent conventional therapy than under irradiation. It is widely known that x-ray has no fungicidal properties when applied to living cultures of fungi in vitro. Jacobson(14) suggests that the clinical results from x-ray are probably due to factors of immunity generated in the tissues by the x-ray. Over-treatment with x-ray, as Hazel and Brundage(15) have pointed out, reduces the local tissue immunity until the conventional dermatological remedies are of little value. We agree that, if the condition does not subside after four to six weekly superficial x-ray treatments using one-quarter erythema doses (75 roentgen units), it is unlikely to be favorably influenced by further x-ray treatment.

It is of utmost importance to remember that treatment should not be over-vigorous, since an allergic state frequently exists. It is not uncommon to see eruptions of the hands "flare up" following intensive treatment of the feet for dermatophytosis.

We shall attempt to outline the therapeutic regime which we have used with satisfactory results in dealing with eczematoid dermatides of the hands:

1. Adequate rest, a well balanced diet, sunshine, non-competitive recreation, etc. Such general instructions are of importance, but are frequently neglected by the physician.
2. When a pyogenic element is present, a low carbohydrate diet is used.

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9. Muende, I.: Cheiropompholyx, Brit. J. Dermat. 46:479 (Nov.) 1934.
10. McLochlan, A. D. and Brown, W. H. Cheiropompholyx, Brit. J. Dermat. 46:457 (Nov.) 1934.
11. Robert, P.: Nature of Reaction of Eczematous Skin to Staphylococcus Toxin, Arch. Dermat. and Syphil. 175:530, 538. 1937.
12. Ramel, E.: Neuropathic Eczema, Brit. J. Dermat. and Syphil. 49:307-320 (July) 1987.
13. MacKee, George M.: X-ray and Radium in the Treatment of Diseases of the Skin, Philadelphia: Lea and Febiger, 1938, p. 495.
14. Jacobson, H. P.: The Effects of Roentgen Ray on Fungi in Vitro, Arch. Dermat. and Syphil. 38:38 (July) 1938.
15. Hazel, O. G. and Brundage, Carl: X-Ray and Ultraviolet Light in the Treatment of Dermatophytosis, South. M. J. 31:1297-1298 (Dec.) 1938.

3. We routinely advise our patients to avoid iodides and bromides, since these substances are notorious for producing and exaggerating vesicular cutaneous eruptions.
4. Sedation in the form of barbiturates is indicated in some cases. Calcium intravenously or by mouth is frequently of value as a "skin sedative."
5. If the situation represents a contact dermatitis, the patient should be removed from that environment. Where this is not feasible, greases or other protective coverings for the skin should be used. In some cases of contact dermatitis, as in Rhus dermatitis, we attempt to desensitize the patient by injecting extracts of the offending substance. Extreme caution must be observed in the administration of these extracts, since the material produces a dermatitis venenata wherever it comes in contact with the skin of a highly sensitive individual.
6. In obscure cases, it is definitely worth while to search for foci of infection such as are presented in the sinuses, tonsils and teeth.
7. When the lesions are dirty and secondarily infected, the first principle of local treatment is the use of soaks, compresses and mechanical debridement. The results from these simple procedures are often astonishing. We usually use 1:4000 or 1:6000 dilutions of potassium permanganate for the soaks and compresses. It should be remembered that when there is a dermatophytosis of the feet, the feet, as well as the hands, should be treated.
8. Following the soaks, we advise the patient to apply Castellani's paint once or twice a day. Castellani's paint contains saturated alcoholic basic fuchsin 10 cc., 5 per cent phenol in aqueous solution, 100 cc., boric acid, 1 Gm., acetone 5 cc. and resorcin 10 Gm. The chief drawback to the use of Castellani's paint is the difficulty in its preparation. We feel, however, that it is less likely to produce "flare ups" than are many of the conventional remedies. If Whitfield's ointment is used, we feel that it should never exceed one-half U.S.P. strength.
9. In all cases of chronic eczematoid dermatitis of the hands, we advise our patients to avoid placing the hands in soap and water, as far as possible. We advise them to wear white cotton gloves, over which are placed rubber gloves, when exposing their hands to water. The hands may be cleansed with olive oil, sulphonated oils, and in some cases, a superfatted soap.
10. After the acute phase has subsided, a stimulant such as 3 per cent ichthyol or 5 per cent crude coal tar in zinc oxide ointment is indicated.
11. If the above regime does not prove efficacious, x-ray therapy is then considered.
12. We have recently treated two patients with dermatophytosis of the hands and feet with copper ionephoresis, with good results.

In summary, we would like to emphasize the following points:

1. Every person presenting a chronic eczematoid dermatitis of the hands should have a careful history and a complete physical examination, which will usually suggest and frequently make the etiological diagnosis.
2. All suspicions should, insofar as is possible, be confirmed by the various procedures, such as patch tests, etc., at one's disposal.
3. We advise against the indiscriminate use of x-ray therapy, since intelligent conservative management usually proves more efficacious.
4. A treatment regime which has proven satisfactory in our hands has been outlined.

Abstract of Discussion

Dr. Joseph A. Elliott (Charlotte): The subject that Dr. Barefoot and Dr. Callaway have presented is a very timely one. All of us who are doing dermatology see large numbers of patients with this condition. We have made it a rule in our practice when a patient comes in with a chronic eczematoid eruption of the hands to do a routine trichophytin test. We find that this test is positive in a fairly large number of cases. Now, as Dr. Barefoot has pointed out, a positive trichophytin test does not necessarily mean that the patient has a ringworm infection at that time; but it does mean that he either has or has had a ringworm infection.

A point I wish to mention, which I don't believe was brought out in the paper, is the question of reading this test. With the trichophytin test we may get what we call a positive wheal reaction in fifteen minutes or more, or we may get a delayed reaction which occurs twenty-four, or forty-eight, or seventy-two hours after, very similar to the positive tuberculin test. These reactions indicate different groups of organisms which may be present. A negative test is strong evidence that the eruption is not being produced by a fungus infection, and in many of those instances it is produced by some form of contact. I think next to ringworm infection, contact dermatitis infection is perhaps the most common.

The patch test is a very valuable one in determining the etiological cause. Dr. Barefoot has mentioned the precautions to be taken during the patch test, and I also would like to emphasize that. We have for the past year been treating the cases produced by ringworm with copper ionephoresis, which Dr. Barefoot said he used in two cases. From May of last year until the present time we have treated 114 new cases and a fairly large number of old cases by this method. While we have some doubt as to the actual number of cases we have cured, we are convinced that this is by far the best method of treating this type of infection.

The "ids" with ringworm are common, and I think Dr. Barefoot has covered that subject rather thoroughly. The "ids" from bacteria are not common—the so-called bacterial "ids." But we do see an occasional case of bacterial "id" in which the patient has numerous pus "ids" situated on the palms of hands or soles of the feet. On culture these pustules are negative. It is necessary to find the focus of infection in order to get rid of this infection. However, in some patients we are unable to do so. In a recent case we obtained an unusual organism from a stool culture; and by giving that patient vaccine produced from this organism we were able to cure the patient. This condition is very similar to a pustulosis.

There is only one thing which I wish to add to Dr. Barefoot's and Dr. Callaway's paper. So far as wet compresses are concerned, I think that a dilution of copper ionephoresis is probably as efficient as potassium permanganate, and most of my patients prefer that to potassium permanganate. From a therapeutic standpoint, I don't think it has any marked value over potassium permanganate.

The Complexity of the Human Organism.—In the not too distant future a definite basis may be established for an understanding of the physical and chemical processes involved in health and disease. Then, the complexity of the human organism with its delicately adjusted mechanism will be better understood and appreciated. It will be seen that man is not necessarily "the animal of the wig, the ear-trumpet, the glass eye, the porcelain teeth, the wooden leg, the silver windpipe"—"a creature that is all mended from top to bottom"—"a basketful of pestilent corruption, provided for the support and entertainment of microbes"; but instead he is "a shop of rules, a well-trussed pack, whose every parcel underwrites a law." He is a part of a great experiment. His life is like a string of many different colored beads whose beauty and usefulness depend upon the cord that binds them together in unity of pattern and purpose. — M. L. Crossley: Recent Advances in Chemotherapy, Science, 91:373 (April 19) 1940.

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There is no such thing as Mexican, White or Negro tuberculosis. The infection is passed from one race to another. No matter what his race, a person with tuberculosis is, first of all a human being, and, next a potential spreader of the trouble to others in the community. Health Crusader, Apr. 1940.

EXPERIENCES WITH HISTAMINASE (TORANTIL): A Preliminary Report

THOMAS W. BAKER, M.D., F.A.C.P.

CHARLOTTE

We have recently witnessed phenomenal advances in drug therapy. A drug hardly gains a place in the sun before it is replaced by another more efficient and less toxic preparation. The new drugs of today are not so much of an unknown quantity as in former years; for careful research to determine its toxicity and considerable clinical experience are now necessary before a new preparation is released to the profession. However, it is only after prolonged clinical trial that we are able to arrive at the proper indications and, just as important, the proper limitations of each drug.

The drug I wish to discuss today, histaminase, was released after four years of clinical research and investigation in December, 1939, under the trade name of Torantil by the Winthrop Chemical Company. Histaminase has been suggested for the treatment of many varied conditions, chiefly for those of an allergic nature. At the present time it is difficult to separate the chaff from the wheat, and I realize that an attempt to evaluate the reports of others and to record my own limited experience might be somewhat premature. Therefore, I should like to designate this discussion as a preliminary report.

In order to understand the action of histaminase, it is necessary to review briefly the physiological action of its natural antagonist, histamine. I shall mention only the salient points, since this report is primarily clinical. Histamine is derived from histidine, one of the essential amino acids, and is present in minute quantities in the living cell. Although histamine is a normal constituent of the tissues and fluids of the body, and stimulates certain physiologic functions, its presence in excess of normal requirements gives rise to toxic manifestations. According to Best(1), histamine is not released from the cell as long as the cell membrane remains intact. However, it appears that a

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1. Best, C. H.; Dale, H. H.; Dudley, H. W.; and Thorpe, W. V.: The Nature of the Vasodilator Constituents of Certain Tissue Extracts, J. Physiol. 62:397 (Mar. 15) 1927.

slight injury to the cell from some physical stimulus or allergen (antigen) may release histamine into the blood stream and extracellular fluids in abnormal quantities to produce either local or systemic reactions. Its local effects may be demonstrated by injecting a weak solution of histamine intradermally. It will produce a response characterized by local erythema, and an exudation of fluid with urticarial formation. This is presumbably due to capillary paralysis and to increased permeability of the walls of the minute skin vessels. When histamine is injected subcutaneously, it may cause headache, vertigo, flushing of the face, urticaria, a fall in blood pressure, and at times a clinical picture closely resembling anaphylactic shock. It is also a powerful gastric secretagogue, and is used as a stimulus to obtain the maximal hydrochloric acid production in performing gastric analyses.

Evidence has accumulated to support the theory that certain allergic manifestations, and other conditions may be directly or indirectly concerned with the abnormal release of histamine or histamine-like substances. Fortunately, nature has endowed us with an elaborate mechanism of chemical and hormonal checks and balances, with agents which are capable of inactivating harmful substances. In 1915, Eustis(2) discovered an enzyme in the liver which would neutralize histamine. In 1930, Best and McHenry(3) demonstrated substances which would neutralize histamine in the blood, muscles, spleen, adrenals, lungs, kidneys, and small intestines. They showed that its action was specific for histamine, and designated the substance histaminase. It seems likely that when the amount of histaminase present in the body is insufficient to neutralize the histamine split off from proteins, or when there is an excess of histamine as a result of antigen-antibody union such as occurs in sensitized patients, allergic symptoms develop. Under these circumstances, the administration of supplemental amounts of histaminase seems indicated.

Histaminase has been employed in the following conditions: Physical allergy, serum sickness, insulin sensitivity, chronic urticaria, allergic rhinitis, vascular headaches, asthma, hay fever, peptic ulcer, chronic ulcerative colitis, migraine, Meniere's disease, allergic purpura, childhood eczema, contact dermatitis, acne, burns. It is probably safe to state that success has attended its use in the first six conditions listed. In the other conditions, experience has been either too limited to warrant conclusions or the investigators have disagreed regarding its effectiveness.

Excellent experimental evidence is available that tissue injury by physical, thermal and chemical agents is followed by an abnormal release of histamine. The value of histaminase in the treatment of physical allergy seems to be well established. By physical allergy is meant those conditions in which patients are unusually susceptible to the effects of cold, heat, and light. The readily recognizable cases of hypersusceptibility to cold are supposed to be quite rare, but I think many of us will recall patients who complained that exposure to cold would cause a generalized pruritis and possibly an urticaria. These patients may represent cases of cold allergy of a mild character. I would like to give briefly the histories of two patients who suffered from hypersusceptibility to cold and who were successfully treated with histaminase. These cases were reported in detail in a recent issue of the *Journal of the American Medical Association*(4).

A woman, aged sixty-eight years, was first seen in September, 1938. She had enjoyed unusually good health until February of the same year. At this time, while she was kneading dough with cold milk, her fingers and hands became painful and swollen so that the hands could not be closed. The pain and color changes disappeared after a few minutes, but the localized edema persisted for six hours. Since this first experience, immersion of the hands in cold water or exposure to cold had produced similar reactions. Cold air would produce paresthesiae of the face and occasional edema of the lips and eyelids. Cold drinks would cause an irritative cough and swelling of the lips and tongue so that speech was difficult. She was careful never to remove her dental plates from cold water because of the swelling of the gums which resulted when the teeth were placed in her mouth. For months she had taken olive oil baths. It was necessary to heat the bed clothes before she retired to prevent a generalized pruritis. There was no history of pollen sensitivity, food or drug

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2. Eustis, A. C.: Biochem. Bull. 4:97, 1915.
3. Best, C. H. and McHenry, E. W.: Histamine, Physiol. Rev, 11:371-477 (Oct.) 1931.
4. Baker, T. W.: Histaminase in the Treatment of Cold Allergy, J. A. M. A. 114:1059-1062 (Mar. 23) 1940.

idiosyncrasies, or other allergic manifestations.

The patient was remarkably active and alert for her years. The physical examination was essentially negative except for a moderate degree of hypertension. The routine laboratory procedures, including serological reactions of the blood, urinalysis, and complete blood count, were all normal.

The diagnosis of hypersusceptibility to cold was readily confirmed by a simple test. Cold water from a faucet was allowed to run over the hands and forearms for about one minute. Within two minutes, the hands and forearms became very red and were quite painful and swollen, the changes being sharply confined to the immersed parts. The patient complained of a severe headache and palpitation, slight edema and pruritis of the lips. These phenomena all disappeared after ten minutes except for the localized edema, which persisted for twenty-four hours. The standard test for cold sensitivity proposed by Horton and Roth was strongly positive.

The patient was given fifteen units, or three tablets, of histaminase daily by mouth for five weeks. In addition to this, a method of desensitization to cold was carried out by having the patient immerse the hands in water at 10 degrees C. for one minute twice daily; during the second week the time of immersion was increased to two minutes twice daily, and so on until the fifth week, when the hands were immersed for five minutes twice daily. The patient was instructed not to increase the time of immersion if severe reactions occurred. The results of treatment were most gratifying. It became possible for her to use cold water indiscriminately, and a recent letter states that the patient is enjoying excellent health and no longer fears exposure to cold.

The second case was similar in many respects, and I shall, therefore, not relate it in detail:

A woman, aged twenty-six years, had usually enjoyed excellent health. In the summer of 1932 during very hot weather, she had allowed water from melting ice to drop on her face for several minutes. Within a short while she noticed edema of the face, accompanied by a stinging sensation. Shortly after this incident, she observed swelling and pallor of the hands when she held a glass containing a cold drink. At times merely placing her hands in the refrigerator to remove food would cause an urticarial reaction of the hands. The following winter, exposure to cold for brief periods would cause swelling, erythema, and pruritis of the exposed parts. She avoided cold baths and swimming because they always produced a "checker-board mottled appearance of the skin". The symptoms had persisted for seven years before treatment was begun. Physical examination was negative. Treatment was essentially the same as in the first case. Again excellent results were obtained, so that it is now possible for her to handle ice and to disregard cold.

The cases of cold allergy reported by Horton, Roth, and Brown(5) of the Mayo Clinic are very enlightening and should be read in detail by those who are interested in this subject. Their observations on gastric acidity after immersion of the hands in cold water show an almost identical increase in the hydrochloric acid curve to that observed in the same individuals after the standard histamine injection for gastric analysis.

Histaminase appears to be effective also in cases of localized edema resulting from heat allergy. Vaisberg(6) has recently reported two such cases. One patient, an asthmatic woman, had painful edematous swelling of the ankles and calves during hot weather only. The second patient spent much time near the oven, and had noted for many years that the heat would induce painful swelling of her forearms. The administration of histaminase gave complete relief in both cases. Goodson(7) has suggested that extreme sensitivity of the skin to light may also be due to histamine activity.

Foshay and Hagebusch(8) have met with considerable success in the treatment of serum sickness with histaminase. In 18 of 20 patients the symptoms were relieved within seven to thirty-six hours. The pa-

5. (a) Horton, B. T.: Cold Allergy, Proc. Staff Meet., Mayo Clin. 2:276-277 (Nov. 23) 1927.
   (b) Horton, B. T. and Brown, G. E.: Histamine-like Effects on Gastric Acidity Due to Cold, Ibid. 7:367-371 (June) 1932.
   (c) Horton, B. T., Brown, G. E., and Roth, Grace: Hypersensitiveness to Cold with Local and Systemic Manifestations of a Histamine-like Character: Its Amenability to Treatment, J. A. M. A. 107:1263-1269 (Oct. 17) 1936.
   (d) Horton, B. T. and Roth, Grace: Collapse while Swimming: The Most Dangerous Consequence of Hypersensitiveness to Cold, Proc. Staff Meet., Mayo Clinic, 12:7-11 (Jan. 6) 1937.
   (e) Roth, Grace and Horton, B. T.: Hypersensitiveness to Cold: Treatment with Histamine and Histaminase; Report of Case, Ibid. 12:129-134 (Mar. 3) 1937.
6. Vaisberg, M.: Histaminase in the Treatment of Physical (Heat) Allergy and Some Other Conditions. Report of 5 cases. New York State J. Med. 39:2199 (Dec.) 1939.
7. Goodson, W. H.: Physical Allergy, Proc. Staff Meet., Mayo Clin. 13:500-504 (Aug. 10) 1938.
8. Foshay, Lee, and Hagebusch, O. E.: Histaminase in Serum Sickness, J. A. M. A. 112:2398-2402 (June 10) 1939.

tients exhibited generalized urticaria, severe itching, arthralgias, edema of the lips and eyes, etc. They believe that the intramuscular administration of histaminase is more effective than oral medication. They suggest its use as a prophylaxis in the prevention of serum sickness and reactions which may follow the administration of antitoxins.

Roth and Rynearson(9) obtained beneficial results with the use of histaminase in the treatment of local allergic manifestations to insulin. Since the introduction of protamine zinc insulin, we have been impressed with the fact that a red, hard, tender, itchy area not infrequently develops at the site of injection and may last for several days. These workers used histaminase in 12 such cases, reporting dramatic relief in some and failures in others. They thought their failures could be attributed to a lack of uniformity in the potency of the drug which newer developments in its manufacture have eliminated. Histaminase has also proved to be of value in preventing local reactions in the occasional patient who is sensitive to liver extract.

Prickman(10a) is enthusiastic over the results obtained with histaminase in the treatment of a large number of patients with allergic rhinitis. Adelsberger(11) and Forman(12) report encouraging results, while the experience of a few investigators has been disappointing. Prickman(10a) says that disappointing results frequently occur in those cases in which the infectious factor predominates.

One of the promising fields for histaminase therapy appears to be those cases in which chronic, recurring urticaria and angioneurotic edema of undetermined origin are the principal manifestations of the allergic state. These cases have usually run the gauntlet of therapeutic measures without relief. Laymon and Cumming(13) report that approximately 60 per cent of their cases were clinically cured with histaminase, 10 per cent improved, and failures occurred in 30 per cent of the cases. However, the number of cases reported is too small to reach satisfactory conclusions. Dr. Graham Reid, who will discuss this paper, has had considerable experience with this type of case and will give us his results with histaminase.

I hesitate to discuss the treatment of hay fever and asthma with this drug, as the reports are quite conflicting. At a recent meeting of the American College of Physicians, I gathered that the consensus of opinion was that results had been somewhat disappointing, but that it may prove to be a valuable adjunct in the treatment of these conditions.

In 1939 Horton, McLean, and Craig(14) reported a new syndrome of vascular headache. They described it as an excruciating and incapacitating headache, limited to one side of the head and involving the eye, temple, neck, and often the face. The headache is accompanied by phenomena of vasodilation, such as prominence of the temporal vessels, lacrimation and engorgement of the soft tissues of the involved eye, and flushing of one side of the face. The usual scotoma and gastro-intestinal upsets of migraine were not present. The attacks occurred frequently, usually lasting from fifteen minutes to two hours, and in most cases occurred with almost clock-like regularity at night. This type of headache could be induced in these individuals by an injection of histamine and could be relieved by the intravenous administration of adrenalin. Their patients were gradually desensitized to histamine and excellent results were obtained. While the authors had not employed histaminase in the treatment of this type of headache, it seems a logical suggestion.

I have recently observed a case of severe so-called ophthalmic migraine which presented similar features and which was completely relieved by histaminase. The patient is a male laboratory technician, who had suffered with headaches for ten years. These headaches were preceded by scotoma, but there were no associated gastro-intestinal upsets. They were always one-sided, centering in or over one eye, excruciating in character, and accompanied by a tingling in the fingers of the opposite side. Another unusual feature was the presence of an urticarial spot which appeared on the side of

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9. Roth, Grace M. and Rynearson, E. H.: The Use of Histamine and Histaminase in the Treatment of Allergic Reactions to Insulin, Proc. Staff Meet., Mayo Clin. 14: 353-358 (June 7) 1939.
10. (a) Prickman, L. E.: Personal communication.
    (b) Prickman, L. E.; Lillie, H. I.; Roth, G. M.; and Fleming, R. G.: Results of the Use of Extract of the Intestinal Mucosa in the Treatment of Vasomotor Rhinitis, Ann. Int. Med. 13:2235 (June) 1940.
11. Adelsberger, L.: Intestinal Extracts in Allergic Diseases, Fortschr. d. Therap. 13:568 (Oct.) 1937.
12. Forman, J.: The Use of Histaminase in the Treatment of Various Allergic Manifestations, Ohio State M. J. 36:56 (Jan.) 1940.
13. Laymon, C. W. and Cumming, H.: J. Invest. Dermatol. 2:301 (Dec.) 1939.
14. Horton, B. T.; MacLean, A. R.; and Craig, W. McK.: A New Syndrome of Vascular Headache: Results of Treatment with Histamine: Preliminary Report, Proc. Staff Meet., Mayo Clin. 14:257-261 (April 26) 1939

the nose corresponding to the side of the head involved. The headache had almost always occurred on Thursday afternoon for several years. During the past six months he has taken 20 units of histaminase daily. As an experiment, he omitted the histaminase on one occasion for several days before the anticipated time of headache. He says the scotoma recurred but that he was able to abort the headache by dissolving several tablets of histaminase and taking them immediately.

I have used histaminase in several cases of migraine of moderate severity which had not responded to ergotamine tartrate, but the irregularity of the seizures and the presence of associated neurogenic factors make the interpretation most difficult. I do not wish in the least to imply that histaminase is the answer to the garden variety of migraine, but it may offer hope in such cases of so-called vascular or ophthalmic migraine.

There are sporadic reports, mostly in the German literature, of encouraging results in the treatment of chronic ulcerative colitis with histaminase on the assumption that this distressing condition may be allergic in nature. These reports need further confirmation.

It was logical that the relation of histamine to the occurrence of peptic ulcer should be investigated, since maximal hydrochloric acid production occurs with histamine stimulation. Earlier work by Atkinson and Ivy(15) did not indicate that the gastric secretory response produced by histamine was inhibited by histaminase. However, Moldenschardt(16) showed that gastric acidity in cases of peptic ulcer is reduced about 50 per cent after eight to ten days of treatment with histaminase. The very recent work of Roth and Horton(17) on the physiological effects of histaminase on gastric secretion is most interesting. These workers found that the introduction of histaminase into the duodenum by tube practically abolished the rise in gastric acidity which is usually observed after a subcutaneous injection of histamine. In other cases, histaminase was injected intramuscularly thirty minutes before a subcutaneous injection of histamine, and again the usual rise in the gastric acids did not occur. In addition, the systemic effects of histamine were apparently eliminated. They feel that they have definite physiological evidence that histaminase administered to man inhibits the action of histamine on gastric secretions. Moldenschardt(16), Erklentz(18) and others report good results with histaminase in the treatment of both gastric and duodenal ulcers. Because of the notorious difficulty in interpreting any type of therapy in peptic ulcer, these reports can only be evaluated by describing them as interesting, perhaps promising, and, we hope, a step in the right direction. It needs much confirmation and a tremendous body of clinical trial before any judgment can be reached.

I have never observed any evidence of toxicity from histaminase, and a careful search of the literature reveals only one case in a foreign report in which there was a questionable reaction to this preparation(19). In justice to histaminase, I believe that some of our disappointing results may be due to one of three reasons: (1) Insufficient dosage. (2) Some of the earlier batches of material were inert, but this has been remedied. (3) It may have been used in some conditions in which there seemed to be no plausible indication. Histaminase seems most effective in those allergic states in which urticaria, generalized pruritis, and local tissue sensitivity are the predominant features. Again let me label this paper as a preliminary report, for many of the statements herein may need revision with subsequent experience. Histaminase is distinctly not a panacea, but it may prove to be a valuable adjunct in our therapy of what might be broadly termed as the "allergic state".

Abstract of Discussion

Dr. C. Graham Reid (Charlotte): This very interesting and timely paper presented by Dr. Baker merits our careful consideration, for if, indeed, histaminase has opened up a new avenue for the treatment of allergic manifestations, then many of our perplexing and refractory clinical problems are nearing their solution. But if on the other hand, this is but another blind alley, then the sooner we appreciate this fact the better.

It is generally believed at present that the wheal in urticaria is produced either by histamine or by histamine-like substance, liberated into the tissues as the result of an allergic reaction, and while

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15. Atkinson, A. J. and Ivy, A. C.: Action of Histaminase on Gastric Secretory Response to Histamine and to a Meal, Am. J. Physiol. 107;168 (Jan.) 1934.
16. Moldenschardt, H.: Torantil, a Preparation from Intestinal Mucosa, Med. Klin. 32:153 (Jan. 31) 1936.
17. Roth, Grace M. and Horton, B. T.: Physiologic Effects of Histaminase and Histamine, J. A. M. A. 114:522 (Feb. 10) 1940.
18. Erklentz, W. and Erklentz, B. W.: The Inactivation of Histamine in the Body by Torantil, Munchen med. Wchnschr. 83:17 (Jan. 3) 1936.
19. Scheef, A.: Allergic Manifestations Following the Injection of Torantil, Munchen med. Wchnschr. 83:1740 (Oct. 16) 1936.

histamine may be a normal constituent of tissues and of some fluids of the body, its presence in excess of the normal requirements may give rise either to local or systemic toxic manifestations. It seems likely that histamine may be liberated by a given cell when that cell is damaged, or by strenuous stimuli of either a chemical, physical or thermal nature. Indeed it is not uncommon that an emotional upset may initiate an attack of urticaria. The liberated histamine produces in turn capillary dilatation, increased capillary permeability with resultant edema. That the urticarial wheal is closely associated with histamine or a histamine-like substance is indicated by the work of several German investigators, who have demonstrated that the fluid of the urticarial wheal when injected into an experimental animal will produce contractions of the uterus similar to the contractions produced by the injection of histamine.

There is an abundance of evidence to indicate that histamine can be inactivated both in the experimental animal and in the human subject by a substance which has been designated as histaminase. If we accept the theory that urticarial lesions are produced by excessive liberation of histamine, then it is only a natural step to the use of its physiologic antagonist, histaminase, in the treatment of this allergic manifestation.

During the past fifteen months, seventeen cases of refractory, generalized urticaria have come under my observation, and in these the use of histaminase was tried. All of these patients had had urticaria varying from four days to six months, before they were tried on histaminase. All of them had had preliminary therapy consisting of one or more of the usual therapeutic efforts, such as the use of adrenalin, hematherapy, non-specific desensitization with histamine acid phosphate or various types of diet such as low sodium and high potassium, without evidence of improvement. None of these patients received any additional therapy while the use of histaminase was being tried.

In the brief time allotted for this discussion, it is not possible to go into each one of these cases in detail. However, in nine cases satisfactory results were obtained, and I consider that the clinical improvement was clear-cut enough to believe that the use of histaminase played a definite part in the symptomatic improvement. In three cases the response was questionable. Five cases showed no improvement after adequate trials on the drug.

In urticaria periods of exacerbation and quiescence are seen frequently, even without any medication. It is exceedingly difficult to establish any control cases, as the course of urticaria is so variable. Therefore, while in this very small number of cases the use of histaminase appears to be of some value, I feel that only through large numbers of clinical cases, carefully controlled and skillfully interpreted, may we arrive at a sound basis for our judgment of the efficacy of histaminase in the treatment of this particular type of allergic manifestation.

The Patient and His Background. — Skilled physicians, gifted with peculiar insight into human nature, can often estimate a personality with remarkable accuracy in a few minutes or even seconds, but in general the more a doctor knows of his patient's background the greater advantage he has in handling the case. That is the great advantage which the general practitioner has always possessed and still possesses.—Peabody, Francis W.: Doctor and Patient, New York, The Macmillan Company, 1939.

ANOTHER GOITER REGION

Roderic O. Jones, M.D., D.N.B.

Burnsville

Maps outlining the goiter districts of the United States have failed to indicate any wide prevalence of simple goiter in North Carolina. However, in Yancey County, North Carolina, a thyroid survey has shown a very high incidence of simple goiter in the school children. It is of interest to note that this county has an average altitude of 3,000 feet. The thyroid survey was made during the months of January and February, 1940, in the schools of Yancey County, following the procedure outlined by Olesen in Public Health Report No. 192.

A total of 1411 school children in the fourth through the eleventh grades were examined, and 56.6 per cent of this number were found to have simple goiters. This high percentage compares with results of surveys made in known goiter regions such as Michigan and Ohio, and the mountains of Tennessee. The number of children examined in this surgery is very small compared to other surveys, but this number represents 10 per cent of the total population of the county. Of the 799 children who were found to have simple goiter, 69 per cent had type 1, or slight enlargement of the thyroid; 26 per cent had type 2, or moderate enlargement; and 5 per cent had type 3, or marked enlargement of the gland. There were three children who had a nodular rather than a smooth goiter.

The incidence of thyroid enlargement in the female was found to increase with age up to the age of seventeen, where the incidence was 72 per cent. Among the males in the group the incidence reached a peak at the age of thirteen, and then decreased slightly. The distribution of simple goiter according to age and sex among the 1227 children in the age group of nine through seventeen is as follows:

		Incidence of Simple Goiter	
Age	*No. Examined*	*Male*	*Female*
9	52	33.3%	58.6%
10	104	52.8%	56.6%
11	145	42.4%	56.0%
12	184	56.0%	56.0%
13	171	60.0%	64.5%
14	166	46.3%	64.5%
15	172	58.8%	58.0%
16	136	45.0%	72.3%
17	97	53.0%	72.0%

A summary of these figures shows that 49.4 per cent of all the males examined and 62.5 per cent of all the females had simple goiter. This distribution between the sexes is compatible with the figures obtained in other similar surveys.

General adult groups are not available for study in this county, but prenatal clinic examinations made over a period of two years by the same examiner who conducted the survey among the school children showed that of 89 completed examinations, 47 of the pregnant women, or 52.8 per cent, had simple goiters.

The only figures available concerning the incidence of simple goiter in the adult males of this section are those obtained in routine examinations of soldiers in 1917 and 1918. The rate reported then for this district was 1.8 cases per thousand men. The rate for the whole state was 1.7 cases per thousand. The present survey indicates that an entirely different state of affairs exists at present.

On the assumption that simple goiter is caused by an insufficient intake of iodine, and that the iodine content of the drinking water would be a fair indication of its presence in the soil and vegetables, water samples were collected from scattered centers of population throughout Yancey County, including samples from each school where the survey was conducted. These water samples were analyzed as to iodine content by Dr. J. F. McClendon of Hahnemann Medical School, Philadelphia. He reported the following results:

Section of the County	*Iodine Content (parts per billion)*	*Percent Goiters In Schools*
Clearmont School	0.53	52.9%
Bald Creek School	0.51	60.2%
Bee Log School	0.66	67.0%
Micaville School	0.20	56.1%
Burnsville School	0.17	53.7%
Pensacola School	1.61	44.4%
Indian Creek	0.65	
Celo	0.65	
Ramsaytown	0.90	
Deyton Bend	0.13	
Relief	0.61	
Burnsville (Chlorinated)	0.23	

According to these figures the water supply of Yancey County falls far short of the standards set by the United States Treasury. To fulfill the maximum requirements the water supply should have an iodine content of at least ten parts of iodine per billion parts of water. However, the iodine content of the water in Yancey County is rather high for a goiter region, when compared with the findings of Mustard and Waring, reported in the *Journal of the American Medical Association* in 1927. They conducted a thyroid survey in Rutherford County, Tennessee, and reported that three samples of water from different sources contained .12, .14, and .16 parts of iodine per billion parts of water. Over 4,000 children were examined there, and only 9.7 per cent had enlarged thyroids.

As yet, no program has been initiated for correcting this deficiency of iodine intake other than instructions to the children that every family in the county should use iodized salt exclusively.

Summary

(1) A thyroid survey of the school children in Yancey County, North Carolina, showed that 56.6 per cent of 1411 children examined had simple goiter.

(2) Girls were found to have a higher incidence of simple goiter than boys; 62.5 per cent of the females and 49.4 per cent of the males had enlargement.

(3) Chemical analysis of the water from all sections of the county showed a marked deficiency in iodine content. The average of twelve samples analyzed was 0.57 parts of iodine per billion parts of water.

(4) Iodized salt has been advocated for every family in the county as a prophylactic measure against the occurrence of simple goiter.

Individualism.—In this age men tend to become machines, whether they wish it or not—machines whose valves are smoothed with hearts' blood. A great peril of the present day springs from this tendency, and that peril is the decay of individualism. By the term "individualism" I do not mean crankiness or fanaticism, but I mean the possession of self-reliance, and of the power and the courage to think and speak for one's self. Individualism requires tremendous energy; no lazy man can possess it. It is much easier to accept blindly other persons' thoughts, use other persons' words, and follow other persons' teachings than it is to seek the truth; it is easier to embrace a theory than to hunt a fact. Most men do not really think at all; they only think they think, and their ideas are as barnacles clinging to a vessel's keel. Such persons love proverbs, dogmas, and formulas; they bow abjectly to catchy phrases; and they accept such phrases, instead of thoughts, opinions, reasons, and facts. It is easier to use such phrases than it is to think, and the world is ruled by the formulas of shallow men.—The Papers and Speeches of John Chalmers DaCosta, Philadelphia, W. B. Saunders Co., 1931, p. 61.

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OCTOBER, 1940

THE A. M. A. QUESTIONNAIRES

While it is quite natural to abhor the very thought of war, and to hope and pray that our country may never have to enter another one, we must face the grim possibility of becoming involved in the desperate struggle between the totalitarian and the democratic ideologies of the world. If this should come to pass, we want to be prepared as a nation; and much of the burden of preparing must rest upon the medical profession. This does not mean that all doctors must join the army as a body; there are many other ways in which they can render service. It is, however, necessary to have full information about them in order to utilize the medical talent of the country to the best advantage. For that reason questionnaires from the A. M. A. have been sent to all the doctors in the country, and committees on preparedness have been appointed in every state.

The following letter from Dr. Webb Griffith, Chairman of the Committee on Medical Preparedness for North Carolina, needs little comment. Surely North Carolina doctors are not willing for our state to remain in its present position, at the very bottom or next to the bottom of the list in the proportion of questionnaires returned. Doubtless many have not sent in the information asked for because they have felt that to do so was equivalent to volunteering for immediate service in the army. As Dr. Griffith says, this is not the case.

North Carolina is recognized as one of the truly progressive states of the Union. Certainly her medical profession is not as backward in cooperating with its parent organization as the present situation would indicate. Let us all give Dr. Griffith our full support and cooperation.

September 30, 1940.

Dr. Wingate Johnson
Winston-Salem, N. C.

Dear Dr. Johnson:

About two months ago, the American Medical Association sent out questionnaires to all the doctors of the country, including those who are not affiliated with organized medicine. In some states the reply has been satisfactory, but in our state it has been very poor. At the last report, fewer than half of our physicians had responded.

The objects of these questionnaires are: 1. To get complete and accurate information as to the medical power of the country. 2. To classify the doctors so that those who may be called to service can be placed in positions for which they are best suited. Also, to be sure that the civilian population and the needs of industry are taken care of.

The American Medical Association is acting as a sort of clearing house for this information, which will be returned to the states. The failure to return the questionnaire was probably largely due to indifference and procrastination. Some have the idea that whatever they may state is binding, but that is not the case. The object is purely for information. It is the policy of the government to use only doctors of medicine and none of the cults. Let us merit that faith and in every way cooperate.

In case the questionnaire has been mislaid, a postal card to the American Medical Association, 535 North Dearborn Street, Chicago, will bring another one.

Until practically all these questionnaires are in, our work on Medical Preparedness will be tremendously hindered. May I ask you through the Journal to urge every member to cooperate.

Cordially yours,

F. WEBB GRIFFITH,
Chairman of the Committee on
Medical Preparedness.

TWO LETTERS FROM MR. WILLKIE

The North Carolina Medical Journal expects to discuss politics only when the medical profession is vitally concerned; then it hopes to speak from an absolutely independent, non-partisan viewpoint.

For almost eight years it has been made increasingly evident that the federal administration is not friendly—to state it mildly—to the present system of American medicine, and that it has gone further and further in its attempt to regiment the medical profession under political control. Whatever his political faith, every doctor must feel a keen interest in the future of medicine. For that reason the medical profession has been anxious to know the attitude that Mr. Willkie would take toward socialized medicine. The following letter, a facsimile of which was carried in the *Rocky Mountain Medical Journal* for September, leaves no doubt as to Mr. Willkie's stand:

Colorado Springs,
August 7, 1940.

My dear Doctor—

You have asked my views on socialized medicine. I am against it. You can quote me any place on this.

Cordially yours,
(Signed) WENDELL L. WILLKIE.

Dr. Leon T. Howard,
Denver, Colorado.

The editorial that accompanies the letter says, in part: "Never before in the memory of the editors of this Journal has either a President of the United States or a candidate for that office issued such an unequivocal statement of his position on a medical policy.

"As President of the American Urological Association, Dr. Leon T. Howard of Denver obtained an interview with Mr. Willkie, while the latter was enjoying his pre-campaign vacation in Colorado Springs . . . Not only was the interview wholly satisfactory to all specialties and groups in the medical profession, but Mr. Willkie at once wrote the letter here reproduced and gave Dr. Howard full permission to reproduce it in 'any way you see fit.'

"An identical space in the October issue of this Journal will be made available to Mr. Roosevelt should he care to use it, and this will be called to his attention."*

Another letter written to Dr. F. S. Crockett, of Lafayette, Indiana, somewhat elaborates Mr. Willkie's views. Dr. Crockett, a trustee of the American Medical Association, had a personal interview with Mr. Willkie, and the letter followed the interview. Dr. Crockett sent a copy of the letter to the editor of this journal, with both his and Mr. Willkie's permission to publish it.

Rushville, Indiana,
September 12, 1940

My dear Dr. Crockett:

You have inquired of me my notions about so-called socialized medicine. I could write you pages covering my views on this subject. That seems to me to be unnecessary because I am against socialized medicine.

I appreciate that there is a social obligation which in some cases must be borne by government, to provide medical service for those who do not have financial means with which to provide it for themselves. The discharge of this obligation, however, should not require any change in the system under which men become skilled in the medical profession through competitive practice. I know of no group in American society who have contributed so much as the American doctors in skill, in charity, and in faithfulness.

If the government enters the field of medical attention to the unfortunate or in connection with the developing of housing centers, etc., it should work out such medical problems in connection thereto with the established medical organizations. Likewise, if there is additional legislation proposed regulating the practice of medicine or the rendering of medical service or in any collaboration thereto, the established medical organizations of the country should be consulted, advised, and conferred with.

You cannot place me too strongly on record as against the encroachment of the government into the functioning of the American professions.

Sincerely yours,
(Signed) WENDELL L. WILLKIE.

Dr. F. S. Crockett
209 Schultz Building
Lafayette, Indiana.

No matter what one's political convictions may be, it is refreshing to find a candidate who is honest enough and courageous enough to take a definite stand without hesitation or equivocation. These two letters should help the doctors of North Carolina, and of the United States, to decide how to vote in November.

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*The Rocky Mountain Medical Journal for October carries a note from Stephen Early, Secretary to the President, stating that "The President's views on the subject about which you inquire were expressed in a speech delivered at the Jersey City Medical Center, Jersey City, New Jersey, on October 2, 1936, and, for your information, I have pleasure in enclosing a copy of that speech."

The Rocky Mountain Medical Journal then reproduces the speech of the President, but since it received wide publicity then and is rather long, this journal will omit it.

AN INTELLECTUAL FEAST
THE DUKE SYMPOSIUM

The medical profession of North Carolina is under great obligation to the Duke School of Medicine already, and this obligation is renewed annually. Every fall since 1936 a symposium on some important and timely phase of medicine has been offered the doctors of the state. With Duke's increasing prestige it has been possible to secure the nation's foremost authorities in the various branches of medicine. Each of the symposiums given so far has had a wide appeal, and the needs of the general practitioner have had primary consideration. This year's program is perhaps the best yet offered. Certainly it would be hard to get together anywhere a more distinguished array of talent than has been secured for this symposium on Diseases of Metabolism and Diseases of the Blood Forming Organs. The program is given in full in the "Bulletin Board" of this issue.

The Scriptural admonition not to forsake the assembling of ourselves together is peculiarly appropriate for the medical profession. In order to make this assembling more pleasant, the social side has not been neglected. A buffet dinner has been arranged for Friday evening, and a block of tickets for the Duke-Georgia Tech game on Saturday have been reserved for visiting doctors.

Within forty-eight hours is compressed a valuable postgraduate course. This is offered to the doctors of North Carolina absolutely gratis. Certainly the least we can do to show our gratitude for this intellectual feast is to attend it and to let our hosts of the Duke faculty know that we appreciate it.

* * * *

DR. PEPPER OF PHILADELPHIA

One of the best papers heard in North Carolina this year was presented to the Ninth District meeting at Mooresville by Dr. D. Sergeant Pepper, of Philadelphia. Dr. Pepper, who served his internship at Duke, is a member of the famous Pepper family of Philadelphia, which for at least three generations has belonged to the aristocracy of American medicine. It would be most interesting to hear a debate between Albert E. Wiggam and John B. Watson as to whether heredity or environment had more to do with shaping this young man's career.

A GENTLEMAN UNAFRAID

Among the flood of books by doctors published within the past few years, it must be admitted that only a very few could aspire to the select company of so-called classics. The one that most certainly seems destined for immortality is Hans Zinsser's delightfully whimsical autobiography, AS I REMEMBER HIM, disguised as the biography of an intimate friend, "R. S.", who had left his memoirs to be edited and revised after his death. The news that Dr. Zinsser died of leukemia on September 3 makes it plain that he had used his leisure during the last two years of his life to write this unique autobiography. He wrote without a trace of bitterness or regret, with (for a doctor) a minimum of cynicism, with a keen wit and an unfailing delicate humor. In the final chapter he writes of "R. S.":

"Something took place in his mind that he regarded as a sort of compensatory adjustment to the thought that he would soon be dead. In the prospect of death, life seemed to be given a new meaning and fresh poignancy. From now on, instead of being saddened, he found—to his delighted astonishment — that his sensitiveness to the simplest experiences, even for such things that in other years he might hardly have noticed, was infinitely enhanced.

"As the disease caught up with him R. S. felt increasingly grateful for the fact that death was coming to him with due warning and gradually. So many times in his active life he had been near sudden death by accident, violence or acute disease; and always he had thought that rapid and unexpected extinction would be most merciful. But now he was thankful that he had time to compose his spirit and to spend a last year in affectionate and actually merry association with those dear to him."

Early in the book, Dr. Zinsser stated that he was an agnostic, and that his ancestors had been agnostics for four generations. There are many who wish for him that he might have had a belief in a hereafter to sustain him in his last months of life; but the serenity with which he faced death must make every doctor proud to be a member of a profession which could give a man the sort of courage that is usually associated with religious faith.

CASE REPORTS

BOECK'S SARCOID

V. W. TAYLOR, JR., M.D., *Medical Resident, City Memorial Hospital*

WINSTON-SALEM

The patient, a colored female of thirty-two years, was admitted to the obstetrical service of the Kate Bitting Reynolds Memorial Hospital on December 1, 1939, about 11:00 p. m., with the following history: Her last menstrual period was in March, 1939, and during the past nine months she had had occasional nausea and vomiting, and had also felt what she thought were fetal movements. On the night of admission she was seized with vague abdominal pain, tachycardia, nausea and vomiting.

Past History: She had had the usual childhood diseases, and had had a tonsillectomy several years previously. The menstrual periods began at the age of fourteen, occurring every twenty-eight days and lasting four to five days until March, 1939. The patient had had three miscarriages, the last in January, 1939. They occurred during the third, fifth and sixth months of pregnancy. She had been a patient at the prenatal clinic for the past few months. She stated that she had had several Kahn tests and was told that they were negative, but that she had to take treatment for her blood because of her miscarriages. She received four intravenous treatments at the City-County Venereal Clinic. Following the fourth treatment she had a reaction, with symptoms of fainting, palpitation and itching. She came back the following week, and because of this reaction was given bismuth, intramuscularly. After this she had a reaction similar to that stated above. She was then sent to the hospital (March, 1939) and treated for paroxysmal tachycardia and arsphenamine reaction. The blood pressure at that time was 170 systolic and 110 diastolic. The patient also had quite a bit of pulmonary edema. It was at this time that she began to notice swelling in the inguinal and cervical regions.

The physical findings on the present admission were as follows: The patient was a young colored female, well developed and well nourished, apparently in good health. She did not appear to be in extreme pain, but did appear uncomfortable. There was no anemia or jaundice detectable.

A rhinitis was present, and the mucous membrane was slightly ulcerated. The lymph nodes in the cervical chains, both anteriorly and posteriorly were enlarged, discrete, firm, irregular and not tender. The nodes in the preauricular area were enlarged and not tender. The axillary nodes were enlarged, discrete and not tender. Both epitrochlear nodes were palpable, about 2 cm. in diameter, non-tender and easily movable. There were a few nodules about the size of a buckshot on both forearms, intradermally. The breasts were not distended, and no colostrum could be expressed. There were no audible changes in the lung fields.

The heart sounds were of good quality, the rate accelerated to 100-120 per minute. No murmurs were audible.

The abdomen was markedly distended and symmetrical, but not of the contour that one expects in pregnancy, being more globular in shape. There was marked tenderness in the upper right abdomen. On palpation there appeared to be a mass in the upper right quadrant, but because of the marked distention it was difficult to make out. The percussion note was dull in the upper right quadrant and tympanitic in the rest of the abdomen. The spleen was not palpable. After the patient was given enemas, a great deal of the distention disappeared.

A pelvic examination showed a multiparous introitus, fairly good perineal support, the cervix slightly soft, with a very small laceration on the left. The fundus was palpated in good position just above the symphysis pubis; the adnexa were clear. There was marked enlargement of the lymph nodes in the inguinal region and femoral canal.

There was a residual exfoliative dermatitis on the lower extremities.

The patient was not thought to be pregnant after this examination, but for records an x-ray was obtained, which showed no fetal parts. The patient was then transferred to the Medical Service.

On admission the following laboratory findings were obtained:

The urine was cloudy and straw-colored, with an acid reaction and a 1 plus reaction for albumin. The specific gravity was 1.015; the high power field was entirely covered with white blood cells. Red blood cells and epithelial cells were also present (centrifuged specimen).

A blood count showed 5,240,000 red blood cells, hemoglobin, 80 per cent; 3,800 white blood cells, with 32 per cent lymphocytes, 1 per cent eosinophils, and 67 per cent polymorphonuclear leukocytes. The temperature was 99 F.

After the fourth hospital day the patient felt better. The mass in the upper right quadrant moved with respiration about 9 cm. below the costal margin, and was not as tender as on admission. The urine continued to show the same findings.

On the tenth hospital day surgical and dermatological consultations were requested. A biopsy of a lymph node was suggested, and a repetition of the white cell count and differential count. The blood Kahn test was negative. A pyelogram was also recommended to rule out a possible kidney condition. Both a gastro-intestinal series and a barium enema were reported negative. The patient was given potassium iodide, 12 drops three times per day, and the dose was increased one drop daily. One per cent adrenalin solution was used for the nose. The right epitrochlear node was removed for study.

On the thirteenth hospital day the white cell count was 5,450, with 60 per cent polymorphonuclear leukocytes, and 40 per cent lymphocytes. The icterus index was 5.

On the fifteenth hospital day a cystoscopic examination was made which showed a mild hemorrhagic cystitis. The urine from the left kidney showed many white blood cells and red blood cells, with a few bacteria. The pyelogram showed a hydronephrosis of the right kidney.

On the twenty-first day of hospitalization a white cell count was made by Dr. Frost, Pathologist of the hospital. The total count was 4,500, with a differential of eosinophils, 15 per cent; juveniles, 6 per cent; stabs, 23 per cent; segmenters, 15 per cent; monocytes, 15 per cent; lymphocytes, 12 per cent; basket cells, 9 per cent; unknown 5 per cent. The biopsy report was as follows: Section of node composed of friable, firmly granular gray tissue. Microscopically the node showed complete destruction of its architecture and replacement by a large number of focal proliferations of epithelioid cells. The foci were small and consisted almost entirely of epithelioid cells, with only a few lymphocytes. A few contained large giant cells located generally at the center of the foci. There was no necrosis present. Diagnosis: Sarcoid of Boeck.

Up to this point the diagnosis was a matter of impressions—Hodgkin's disease, lymphosarcoma, leukopenia, and a luetic condition being considered the likely possibilities.

The rhinitis began to clear up and the patient became less tender over the liver, but there was still definite enlargement of the liver. The patient had no complaints, and was allowed to be up and about the ward. The x-ray examination of the chest suggested the possibilities of metastatic growth or Boeck's sarcoid, the lung fields having the appearance of a miliary tuberculosis, with the exception of both apices, which were relatively clear. Two tuberculin tests were done with 1-1,000 Old Tuberculin, and a 2 plus reaction resulted on both occasions. A glucose tolerance test was done, with a resulting high normal reaction. The stool examination was negative and the van den Bergh reaction was negative.

The liver became somewhat smaller, with no tenderness, after five weeks in the hospital. X-rays of the bones of the hands and feet were made, but did not reveal any gross pathological changes; however, there was a slight coarseness and thickening of the bone trabeculae, frequently seen in Boeck's sarcoid. The characteristic cystic changes of Boeck's sarcoid in the bone were not present.

On the patient's discharge from the hospital, the urine had practically cleared up. The red cell count and hemoglobin were normal, but the patient continued to have a mild leukopenia—4,300 white blood cells, with 49 per cent lymphocytes. The exact cause of the amenorrhea was never determined.

The patient was discharged from the hospital as improved, with a diagnosis of Boeck's sarcoid, and was asked to return to the Clinic for a check-up. She was seen later in the Clinic during the course of the next two months, but her menstrual periods had not yet started. She gave no history of a menopausal syndrome.

Discussion

This case is somewhat similar to that of a colored female, aged thirty-seven, reported by Eichenlaub and Sandler(1). Their case was more typical of the lupus pernio or cutaneous type. While this case is more of the generalized or "Besnier-Boeck-Schaumann" type, their case had had negative Wassermann reactions, yet received treatment, as did the case presented.

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1. Eichenlaub, F. J. and Sandler, I Lewis: Boeck's Sarcoid, Am. J. Roentgenol., April, 1938.

In the paper of Babalion(2) on diseases of Besnier-Boeck-Schaumann, the Strasbourg School's point of view is presented. He classifies the lesions as cutaneous, ocular, lymphatic, respiratory, mucous membrane, osseous, visceral and miscellaneous. The type reported here would come under the lymphatic lesion primarily, with an accompanying respiratory and visceral lesion, the liver and lungs being involved.

There is still discussion as to the etiology of this condition. Formerly it was thought to be tuberculous in origin(3). More recently it is classified as an infectious granuloma of non-tuberculous origin.

This condition may be described as a benign infection involving especially the lymphoid tissues and affecting various other parts of the body, as previously pointed out by Babalion. It has been described under various names: "lupus pernio" (Besnier), sarcoid and "Benignes Miliar—lupoid" (Boeck), benign lymphogranulomatosis (Schaumann), Boeck's sarcoid, "ostitis tuberculosa multiplex cystoides" (Jungling)(4).

The disease was probably first observed and recorded as an affection of the skin, and was described primarily as a skin condition by Jonathan Hutchinson (Hunter). Later it was found that bones, lungs and other organs were affected. Boeck originally described three types, and the histopathology of the lesions have been regularly and repeatedly confirmed. His first form consisted of "small, firm, sharply demarcated cutaneous nodules of waxy or semi-transparent appearance, with brown, bluish or violaceous centers. The surface of the nodules was smooth and ulceration never occurred." (Longcope).

The second form consisted of larger nodules of much the same character, and the third form was a diffuse infiltration of the skin.

In the diagnosis the essential factors are: (1) clinical picture; (2) histology; (3) usually the absence of acid fast bacilli; (4) fine miliary sprinkling of the lungs; (5) bone changes; (6) anergic reaction to high concentrations of tuberculin(1).

Nickerson,(5) in his "Report of Six Cases in which Autopsies were Made", stated that caseation should never be present. This fact is important in differentiating Boeck's sarcoid from tuberculosis. He also states that the giant cells are different.

Other hypotheses which are in favor of the etiological factor's being a tuberculous one are those brought out in the paper of Babalion, on the tuberculide theory, that the disease is an attenuated form of tuberculosis, due either to a degenerated bacillus, a tuberculous toxin or a filtrable virus. Schaumann invokes an inactive tuberculosis of bovine origin. Some authors believe this to be most likely and state that the reason for not obtaining the bacilli on culture and guinea pig inoculation is that the lesion results from a reaction set up by attenuated organisms or organisms of bovine type, the organism being degenerated. Perhaps the syndrome can be due to several causes, as Darier says of all cutaneous sarcoids.

There have been several reports of guinea pig inoculations from suspensions of glands of Boeck's sarcoid with the hope of recovering the acid-fast organism, but these reports show that no organisms have been recovered in several series of inoculations. However, there have been reports that the organisms were recovered in a very few cases when there was known tuberculosis present.

The prognosis in this condition is usually good, as the mortality rate is very low. There have been reports of death due to some complicating factor.

There has been no definite or specific treatment instituted as yet. Several forms of theraphy have been tried, and from the reports, arsenic in the form of Fowler's Solution seems to have been the most widely used. Preparations of chaulmoogra oil have been used, as well as intradermal tuberculin, ultra-violet light and Finsen ray. No form of antiserum has so far been made available.

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2. Babalion, Leun, in New England J. Med., January 26, 1939.
3. Scheidemardel, F.: Boeck's Sarcoid of Hilus Glands, Deutscher Tuberkulse Blatt, October, 1939.
4. Longcope, Warfield T.: The Generalized Form of Boeck's Sarcoid, in The Practitioner's Library of Medicine and Surgery, Appleton, v. 13, p. 125.
5. Nickerson: Boeck's Sarcoid: Report of Six Cases in Which Autopsies Were Made, Arch. Path., July, 1937.

Vitamin Concentrates.—Normal elderly people should neither be denied a sufficient dietary nor purposeful work. However, age inevitably invites acute or enduring episodes of illness in which a normal food intake is difficult or impossible. The longer these lapses obtain, the more likely certain vitamin concentrates (particularly the B and C groups) are to become very useful pharmacologic agents.—E. L. Tuohy, M.D.: An Adequate Dietary in Later Life, Wisconsin M. J. 39:353 (May) 1940.

CLINICO-PATHOLOGICAL CONFERENCE

Duke Hospital

July 12, 1940

Dr. O. C. Hansen-Pruss (reading the clinical summary):

The patient, a thirty-one year old white married female, entered the hospital complaining of severe frontal headaches of seven weeks' duration.

Family History: The father had had "sick headaches", but outgrew them. The mother died of carcinoma of the stomach and breast. One brother had had severe headaches all his life.

Past History: The patient had been married six years, but had never been pregnant. Her general health had always been "only fair." She had had asthma each spring and fall since the age of fourteen; the last attack occurred approximately six days prior to admission, lasting one to two hours. The patient had had recurring attacks of urticaria, seemingly associated with eating pork. She had pyelitis six years ago, treated successfully. Eight years ago, she had severe dysmenorrhea, treated by x-ray therapy over the pituitary; at that time she was given antuitrin S by mouth. This relieved her condition somewhat. The patient had always had recurring "sick headaches" with nausea and vomiting up until the past four or five years. There was no history of an operation or an injury.

Present Illness: For the past three or four months, the patient had noticed an increasing difficulty in remembering places where she put things. She had also noticed a tendency to mix her words while talking. About seven weeks ago, without any previous warning, she had a sudden sensation "as though her eyeballs were turning over and over with many flashes of light". This condition lasted two minutes and was followed by a six-minute period of unconsciousness, during which she had tonic convulsions and demonstrable opisthotonos. She awakened, and with the help of her friends staggered to bed. A few minutes later she developed a severe, sharp pain in the right eye and frontal part of the head, radiating to the occipital region, associated with a knife-like pain on the right side of her nose. This pain persisted for eight days, during which time she did not vomit; she took many Stanback powders for relief. The day after the convulsion, she developed blurring of vision and diplopia, which cleared in about twelve days, to return again twelve days before admission. Nine days before admission she developed complete ptosis of the right eye lid. The right side of the neck became sore and she noted a tendency to fall to the right. She had had no chills and only a slight fever.

Physical Examination: The temperature on admission was 37.9° C.; the pulse 92; respirations 22, and blood pressure 118/80. She was well nourished, obviously ill, a bit somnolent. There was a complete ptosis of the right upper eyelid. The right eye was deviated outward; the right pupil was dilated and fixed. The left eye reacted to light, when it was shone in the right eye. The fundi showed oval discs, full veins; no edema or hemorrhages. The uvula was in the midline. The neck was supple. There was a definite hyperesthesia of the right cornea. There was complete paralysis of the third nerve. Motor power everywhere was equal and good.

Reflexes	Right	Left
Corneals	xxx	xx
Gag	x	
Biceps	xx	xx
Triceps	x	xx
Radio-periosteals	x	xx
Hoffman	0	0
Abdominals	xx/x	xx/x
Knee jerks	x—	x
Ankle jerks	x—	x—

There was no clonus. Position and vibratory senses were intact. Point-to-point tests were normal. There was no dysdiadokokinesia.

Accessory Clinical Findings: The hemoglobin was 84 per cent. The red cell count was 3,700,000, with a color index of 1.2. The white cell count was 8,000. The differential formula was normal. The sedimentation rate was 0 mm. per hour, corrected. Blood Wassermann and Kahn reactions were negative. The blood bromides were 86 mg. per cent. Repeated urine analyses were essentially negative.

A lumbar puncture was done. The spinal fluid dynamics were normal, the fluid clear. The benzidine test was slightly positive. The spinal fluid total proteins were 47 mg. per cent. The colloidal gold and spinal fluid Wassermann were negative.

Course in the Hospital: On the third hospital day, the patient awakened feeling fairly well. She sat up and talked for a while, but suddenly fell back complaining of severe right-sided headache. She had a short tonic convulsion and demonstrated opisthotonos. She was drowsy but oriented. She turned from the prone to the supine position and immediately lapsed into a semi-comatose state; she had a tonic convulsive seizure with incontinence of urine. From time to time she roused and complained of terrific headache. Examination at that time showed:

Cranial Nerves

I. Could not be tested.

II. Blurring of the disc margins with distention of the veins of the retinae and hemorrhages into the retinae.

III, IV, and VI. Ptosis of the right eyelid with dilatation of the pupil; the right pupil did not react to light. The left pupil was small, dilated and contracted at irregular intervals. There was a divergent strabismus.

V. Could not be tested.

VII. There was a suggestive left lower facial weakness.

The remainder of the cranial nerves could not be tested satisfactorily.

Motor System

There was no atrophy or fibrillary twitchings.

There was a flaccid paralysis of the left arm, and some weakness of the left side of the body.

Sensory System

The examination was unsatisfactory.

Coordination

The patient was unable to cooperate.

Reflexes	Right	Left
Corneal	xxx	x
Gag	x	
Biceps	x	xx
Triceps	x	xx
Hoffman	0	0
Abdominal	Absent	Absent
Knee jerks	x	xx
Ankle jerks	x	xx
Plantar	No response	

At this time, a slight stiffness of the neck was noted. The lumbar puncture was repeated, and grossly bloody fluid obtained.

Throughout the remainder of that day the patient complained of a severe right-sided headache. She occasionally fell asleep and at other times was rather drowsy. Temperature, pulse and respirations remained within normal limits.

At two-thirty a. m. on the fifth hospital day the patient sat up and asked for a cigarette. Suddenly she fell back and had a short convulsion. Respirations ceased and in spite of stimulants and artificial respiration, the patient expired.

Discussion

Dr. Hansen-Pruss: An analysis of this patient's history reveals the following important points, which assume greater significance when their sequence is considered: (1) There was a gradually developing loss of memory and tendency to mix words four months before death. (2) Two months later the patient had a sudden attack initiated by light-scotomata, then leading in two minutes to unconsciousness, which was followed a short while later by a generalized tonic convulsion of six minutes' duration with opisthotonus. (3) On recovering from this, she experienced a severe, knife-like pain in the right eye and radiating from the bridge of the nose on the right side to the occiput. This pain endured for eight days. (4) The day after the convulsion she noticed blurring of vision, and diplopia which endured twelve days and then recurred about two weeks before admission. (5) Nine days before admission, or about three and a half months after the onset of the first symptom, she developed a ptosis of the right upper eyelid, then noted a tendency to fall to the right side. (6) There were repeated tonic seizures with opisthotonos and (7) finally, sudden death on the fifth hospital day, approximately three months after the onset of the first symptoms, seven weeks after the onset of the headache.

The interpretation of the physical findings and accessory clinical data is outlined in the chart on the opposite page.

The nature of the underlying disease process is, I believe, quite evident if one considers the patient's age and the story. Although the first symptoms are difficult to interpret, the subsequent history is strikingly that of repeated vascular accidents resulting in multiple injuries to the brain, mainly to the right anterior portion and base of the brain. Such injuries were probably the result of hemorrhage from ruptured aneurysmal dilatation of superficial cerebral arteries and those composing the circle of Willis. The grossly bloody spinal fluid marks the occurrence of a subdural hemorrhage. The early manifestations — namely, the loss of memory, and the tendency to mix words— probably were due to smaller hemorrhages

Physical Examination and Interpretation:

T. 37.9° C P. 92 Resp. 22 B. P. 118/80

(Temperature and pulse rate remained within normal limits.)

		Lesion of:	
1.	Complete ptosis right lid	3rd. C. N. right	Lesion at base of brain (ipsilateral—right)
	Divergent strabismus O. D.	3rd. ?	
	Right pupil dilated, fixed	3rd. C. N. right	
	Consensual reflex present	2nd. C. N. intact	
	Hyperesthesia cornea O. D.		
	Disc margins blurred, veins full		
	Hemorrhages seen 3 days later	2nd. C. N.	
	Suggestive left lower facial weakness	7th. C. N. right (supranuclear)	
2.	Corneal reflex O. D. 3x O. S. 2x	5th. C. N. irritation	
	Abdominal reflexes present on admission		
	Abdominal reflexes absent 3 days later		
	Flaccid paralysis—left arm—upper motor neuron lesion? (Not noted on admission—new development?)		
3.	Repeated tonic convulsion	Infracortical irritation	
	Opisthotonus	Midbrain? Cerebellar?	

4. Lumbar Puncture:
   Dynamics normal
   Clear fluid | Rules out meningitis
   Cells O |
   Benzidine trace
   Proteins 47 mg. %
   Colloidal Gold: Wassermann negative

5. Hbg. 84%, RBC 3,700,000, WBC 8,000
   Blood bromides 86 mg. %
   Wassermann, Kahn negative

6. Lumbar puncture on third day, after tonic seizure—"grossly bloody fluid."
   Massive hemorrhage into cerebro-spinal canal.

of similar origin, in the region of the left fronto-temporal zone. As a matter of interest, other disease processes must be considered in the differential diagnosis, as outlined below:

Differential Diagnosis:

1. Brain tumor. This is not likely because of:
   (a) Sudden onset of cardinal symptoms
   (b) Signs of increased intracranial pressure relatively slight — no definite papilloedema.
   Disparity between neurological signs pointing to brain lesion and evidences of increased intracranial pressure.
   (c) Normal spinal fluid findings.
2. Brain abscess (single or multiple). Against it are:
   (a) The history: suddenness of onset of headache
   (b) Absence of a demonstrable pyogenic process
   (c) Lack of fever, leukocytosis, intoxication, normal sedimentation rate
   (d) Spinal fluid findings
   The same applies to sinus thrombosis
3. Vascular accident with hemorrhage.
   This is suggested by:
   (a) Suddenness of onset
   (b) Borderline age for the manifestations of congenital anomalies (vascular).
   (c) Blood in spinal fluid
   (d) Rapid downhill course with sudden death.

Summary

It is our impression that this young woman had a congenital vascular anomaly which resulted in multiple aneurysmal dilatations of the arteries composing the circle of Willis, or of branches of the superficial cerebral arteries. It should be remembered that she was an asthmatic, and that she had the last severe attack of asthma five days before her admission to the hospital. It is quite possible that these asthmatic seizures, and an accompanying transitory hypertension(1, 2) were important contributory factors, leading to the rupture of the aneurysmal dilatations.

Clinical Impression:

Asthma (history)
Congenital miliary aneurysms of the superficial cerebral arteries
Rupture of such aneurysms
Repeated cerebral hemorrhages
Subdural hemorrhage.

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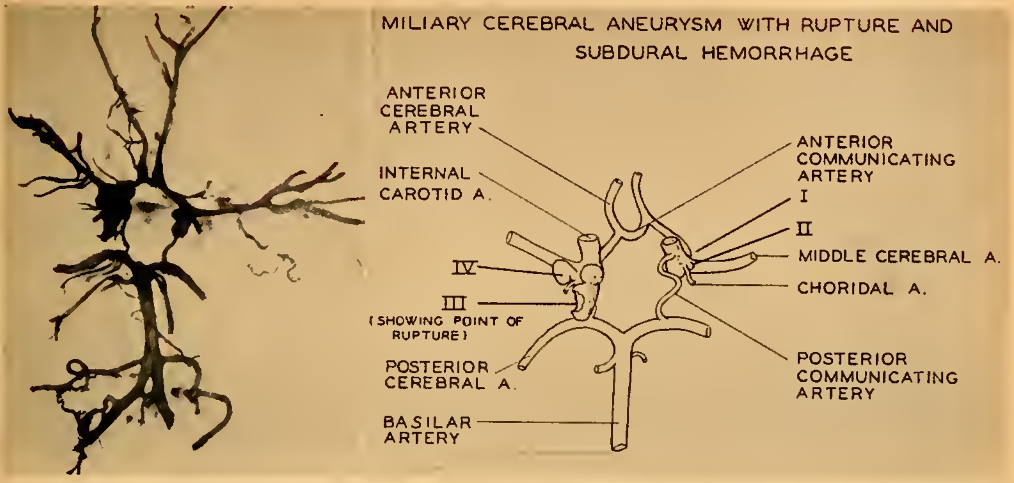
1. McLaughlin, James: Blood Pressure in Allergic Individuals, J. Allergy, 2:360, 1931.
2. Witts, J. J.: The Blood Pressure in Asthma, Guy's Hospital Reports, 83:213, 1933.


MILIARY CEREBRAL ANEURYSM WITH RUPTURE AND SUBDURAL HEMORRHAGE
ANTERIOR CEREBRAL ARTERY
INTERNAL CAROTID A.
IV
III (SHOWING POINT OF RUPTURE)
POSTERIOR CEREBRAL A.
BASILAR ARTERY
ANTERIOR COMMUNICATING ARTERY
I
II
MIDDLE CEREBRAL A.
CHORIDAL A.
POSTERIOR COMMUNICATING ARTERY

Autopsy Findings

Dr. Douglas H. Sprunt: With the exception of the brain the organs showed nothing abnormal. A large amount of blood was found between the dura and pia-arachnoid on the right side. A careful dissection of the cerebral vascular system was made by Dr. G. Margolis. Four aneurysms were found near the circle of Willis. These are well shown in the accompanying illustration and diagram. As shown in the diagram aneurysm III was ruptured and was the source of the hemorrhage. These aneurysms were proven by section to be the result of a congenital defect in the vessel wall. Their formation has been discussed by Forbus(3).

Anatomical Diagnosis: Multiple aneurysms of congenital origin of cerebral vessels with rupture of one; subdural hemorrhage.

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3. Forbus, W. D.: On the Origin of Miliary Aneurysms of the Superficial Cerebral Arteries, Bull. Johns Hopkins Hospital, 47:239, 1930.

The Average Ulcer Patient. The average ulcer patient without a complication can be treated with any sort of a diet, provided the food is soft and the patient eats slowly. The average patient with peptic ulcer can obtain relief from any medication if he lives regularly and watches his eating habits. It is not necessary to make the patient take medicine every hour or two, and to carry milk and cream wherever he goes. A bland diet, with milk between meals and before going to bed, with probably a little belladonna or atropine, or, if necessary, some alkaline powder, may be sufficient.—W. D. Paul: Indigestion and Abdominal Pain, Journal of Iowa State Medical Society, 30:486 (October) 1940.

Therapeutic Optimism.—The time of therapeutic nihilism is over. As recently as 1931 an able physician advised students that, "with the tendency to recover which is inherent in every one, you need not be fussy about just what medicine you can use." But the situation has been radically changed by the discovery of effective hypnotics, analgesics, thyroxine, adrenal and pituitary hormones, insulin, liver extract, vitamins, sulfanilamide, atabrine, carbarsone, prostigmine and specific serums, to mention but a few. Even neurology and psychiatry are yielding to therapeutic approach. We are living in the beginning of an era of the greatest therapeutic triumphs in the history of medicine. This newly acquired knowledge, however, places increased responsibilities on the physician because all therapeutic agents not only can do good but also can be harmful. The practice of medicine has ceased to be but a supervision of the play of the forces of nature. It is rapidly becoming a field of biologic engineering of active intervention. In order to practice good therapeutics the physician must know the beneficial as well as the untoward effects of the physical and chemical agents. He must be as individualistic in treatment as he is in diagnosis. He must have at his disposal all the measures available for the treatment of the same ailment, so that if one fails he may try another. The supervision of the treatment must be close, and too much must not be relegated to nurses. All the patient's complaints should be taken seriously and treated. The importance of the treatment of symptoms is often underestimated. The art of providing sound sleep for a restless patient with pneumonia or with coronary thrombosis may be a lifesaving measure.—Soma Weiss, M.D.: The Medical Student Before and After Graduation, J. A. M. A. 114:1716 (April 27) 1940.

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Patients Need Consideration.—Except for a few low-grade morons and some poor wretches who want to get in out of the cold, there are not many people who become hospital patients unless there is something the matter with them. And, by the same token, I doubt whether there are many people who spend their money on visiting private physicians unless there is something the matter with them.—Francis W. Peabody: Doctor and Patient, New York, The Macmillan Co., 1939.

BULLETIN BOARD

PRESIDENT'S MESSAGE

The Opportunities for Obtaining Post Graduate Medical Education in North Carolina

Our thoughts naturally turn with the fall season and the advent of the school and college year to the idea of acquiring advanced and improved medical knowledge. A stay in a distant medical center for post graduate work is often impractical, because of the financial sacrifice involved and the absence from practice. We may well consider what we have near home that is of excellent quality and may be obtained at little cost of time and money. Post graduate work may be obtained in North Carolina in practically every field of medicine.

At Duke University each October a three-day symposium is held on some important phase of medicine, covering it thoroughly from the diagnostic, therapeutic, and surgical point of view. Men, nationally distinguished for their ability in their specialties, lecture on these subjects. The symposiums are free of all cost to those attending them save the usual expenses of living. The *Bulletin* of the Duke University School of Medicine has carried the following statement for several years: "Duke University School of Medicine is not limited to the training of its own students and staff, but extends to the members of the medical profession the benefit of everything it has." Graduates in medicine are welcomed especially at the various clinics and demonstrations in medicine, surgery, obstetrics and other specialties which are held from 9:00 a. m. to 12:30 p. m. each Saturday, and at the clinico-pathological conferences at 5:00 p. m. on Wednesdays. Post graduate internships for one or two weeks are available to physicians in practice. A fee of $10.00 per week is charged for room and board. Further information may be obtained by writing to the head of the department concerned or to the Dean.

Each year the Extension Department of the University of North Carolina offers courses in all sections of the State. Every phase of modern medicine is covered by physicians of national leadership and distinction. A moderate fee covers the expense of these courses, which are brought to points convenient to all, and which are of most excellent quality.

The University of North Carolina also offers courses at its School of Public Health at Chapel Hill. The faculty is outstanding, and although the school is relatively new its excellence is obtaining national recognition.

The Bureau of Infancy and Maternity Care of the State Board of Health offers free symposiums every year in Pediatrics and Obstetrics. Men of national repute also lead in these lectures and demonstrations. A Seminar in Pediatrics is held during the summer at Saluda. The work is extended over several weeks, and the instruction offered is excellent and of moderate cost.

Thus, it may be seen that unusual opportunity for unexcelled post graduate medical instruction awaits us at our very doors for little or no cost. It is an opportunity which should not be neglected by any man in the medical profession in North Carolina.

HUBERT B. HAYWOOD, M.D.

MINUTES OF THE EXECUTIVE COMMITTEE

Medical Society of the State of North Carolina
September 8, 1910

The Meeting of the Executive Committee of the Medical Society of the State of North Carolina held in the Raleigh Room of the Sir Walter Hotel, Raleigh, on Sunday, September 8, 1940, was called to order by President Haywood at 11:00 a. m.

The following were present:

President, Hubert B. Haywood
President-Elect, F. Webb Griffith
First Vice President, D. W. Holt
Secretary-Treasurer, T. W. M. Long

Councillors:

First District—H. D. Walker
Second District—Thomas Leslie Lee
Third District—W. Houston Moore
Fourth District—G. W. Mitchell
Fifth District—J. G. Pate
Eighth District—James H. McNeill
Ninth District—I. E. Shafer

From Committee on Legislation:

Donnell B. Cobb, Chairman

From State Board of Health:

Carl V. Reynolds, Secretary

The meeting began with the Secretary's request that the date of the 1941 meeting be set. Dr. Mitchell, seconded by Dr. Moore, moved that the next annual meeting of the State Medical Society be held in the Carolina Hotel, Pinehurst, May 19, 20, 21, 1941. The motion was unanimously carried.

President Haywood presented a prepared abstract on the subject of "Medical Preparedness." Dr. Griffith, Chairman of Medical Preparedness in the State, asked for suggestions as to the best method of setting up the draft or examining boards. Dr. Mitchell spoke on the pitfalls of setting up such boards. Dr. Moore suggested that the boards be composed of men who would not be subject to the draft law. Dr. Griffith then read a letter from Surgeon General James C. Magee, to Dr. Olin West stating what had been done to date in this matter.

Following further discussion Dr. Griffith read a memorandum from the Surgeon General concerning "Physical Examination of Selectees under the Provisions of the Selective Service Act." After further discussion, Dr. Mitchell, seconded by Dr. Lee, moved that, if the need arises, each County Medical Society be requested to submit double the number of names of men needed to make up these Boards, and that the State Chairman, with the assistance of the Councillors, make the final appointments to the various Boards. The motion was carried.

Dr. Moore, seconded by Dr. Pate, moved that Dr. Carl V. Reynolds be added to the Medical Preparedness Committee as an ex-officio member. This was unanimously carried.

Dr. Donnell B. Cobb, Chairman of the Committee on Legislation, read through the measures that had been suggested to the Committee. It was suggested that Dr. Cobb wait upon the heads of the various State Departments affected by the proposed legislation and get their reaction to same. Dr. Mitchell, seconded by Dr. Long, moved that the Executive Committee give its full approval to the Committee on Legislation and empower the committee to use its best judgment in all matters pertaining to medical legislation. This motion was unanimously carried.

Dr. Mitchell, seconded by Dr. Moore, moved that the sum of $600.00 be set aside to defray the expenses of Dr. Griffith's Medical Preparedness work. The motion was unanimously carried.

The matter of extending the Durham-Orange Counties Medical Society insurance plan was brought up for discussion. Dr. Mitchell, seconded by Dr. Lee, moved that the Secretary be instructed to write Medical Service Association, Inc., stating that it was acting contrary to the resolution passed by the State Medical Society at its last meeting in going outside Durham and Orange Counties and the subsidiaries of the Erwin Cotton Mills in soliciting business, and that the State Society would appreciate it if this solicitation was stopped.

There being no further business, it was moved that the meeting adjourn.

News Notes from Wake Forest College

Dr. Herbert S. Wells, Professor of Physiology, started work this month at Wake Forest on research on the cause, prevention and treatment of shock. This work is being rushed at the request of the National Research Council in cooperation with the National Defense Program.

Dr. John A. Rose of the faculty of the University of Pennsylvania School of Medicine, who is also on the staff of the Philadelphia Child Guidance Clinic, has been elected to the Department of Psychiatry of the Bowman Gray School of Medicine of Wake Forest College and psychiatrist to the Winston-Salem Child Guidance Clinic. Dr. Rose will assume his position on February 1, 1941. He received his B.A. degree from Rice Institute in 1929, and his M.D. degree from the University of Texas Medical School in 1933. He served an internship at Jefferson Davis Hospital in Houston, Texas, and was assistant resident in psychiatry at the New Haven Hospital and assistant in psychiatry in the Yale University School of Medicine from 1934 to 1936. He served as physician in charge of student mental hygiene at Cornell University for two years, and has served for about two years on the staff of the Philadelphia Child Guidance Clinic as a fellow in child psychiatry of the National Committee of Mental Hygiene. He is a Fellow of the American Medical Association, American Psychiatric Association, and is a diplomate of the American Board of Psychiatry and Neurology.

PROGRAM

Symposium on

Diseases of Metabolism
and
Diseases of the Blood Forming Organs

Page Auditorium
Duke University School of Medicine and
Duke Hospital

Thursday, October 31, 1940

2:00 P.M.—Dr. Cyrus C. Sturgis, Ann Arbor, Michigan
Hemorrhagic Diseases.

3:00 P.M.—Dr. Louis K. Diamond, Boston, Massachusetts
Practical Aspects of Treatment of Anaemias in Childhood.

4:00 P.M.—Dr. Claude E. Forkner, New York
The Leukemias.

8:00 P.M.—Dr. Elliott P. Joslin, Boston, Massachusetts
Diabetes and Its Treatment.

9:00 P.M.—Dr. Thomas B. Cooley, Detroit, Michigan
Hemolytic Anaemias

Friday, November 1, 1940

9:00 A.M.—Dr. Fuller Albright, Boston, Massachusetts
The Diagnosis of Hyperparathyroidism.

10:00 A.M.—Dr. Eugene F. Du Bois, New York
The Clinical Application and Interpretation of the Basal Metabolic Rate.

11:00 A.M.—Dr. Frank H. Lahey, Boston, Massachusetts
The Management of Hyperthyroidism.

2:45 P.M.—Dr. Allen O. Whipple, New York
Indications for and Results Following Splenectomy.

3:30 P.M.—Dr. Leland S. McKittrick, Boston, Massachusetts
Surgical Complications of Diabetes.

4:15 P.M.—Dr. George R. Minot, Boston, Massachusetts
Some Aspects of the Etiology, Diagnosis and Treatment of Iron Deficiency Anaemias and Pernicious Anaemia.

7:30 P.M.—Buffet Dinner—$1.25.

Saturday, November 2, 1940

9:00 A.M.—Dr. Frank A. Evans, Pittsburg, Pennsylvania
The Nature of Obesity, Its Prevention and Cure.

10:00 A.M.—Dr. Alexis F. Hartmann, St. Louis, Missouri
The Complete Treatment of Diabetic Acidosis.

11:00 A.M.—Dr. Russell M. Wilder, Rochester, Minnesota
What is Hyperinsulinism?

2:00 P.M.—Homecoming Football Game
Duke vs. Georgia Tech.

NEWS NOTES FROM DUKE UNIVERSITY

The following new members have been added to the faculty: In the Department of Psychiatry, Dr. Richard S. Lyman, Professor, Dr. Hans Lowenbach, Assistant Professor, Dr. R. Burke Suitt, Associate, Dr. Maurice H. Greenhill, Associate, and Dr. Daniel J. Sullivan, Instructor; in the Department of Medicine, Dr. Herbert J. Fox, Instructor; and in the Department of Anatomy, Dr. Kenneth L. Duke, Instructor.

NEWS ITEMS FROM THE UNIVERSITY OF NORTH CAROLINA

Dr. C. E. Brown has been appointed Assistant Professor of Pathology in the Medical School and will have charge of the pathological laboratory at Watts Hospital, Durham. Dr. Brown was formerly Assistant Pathologist at the Lankenau Hospital, and Instructor in Pathology at the Graduate School of the University of Pennsylvania. For the past three years he has been pathologist to the St. Francis, the Cottage and General Hospitals in Santa Barbara, California.

Dr. C. D. Van Cleave, formerly of the Department of Anatomy of the Cornell Medical School, has been appointed Assistant Professor of Anatomy in the Medical School.

Dr. Harold W. Brown, of the School of Public Health, made a visit to the Kellogg Foundation in Battle Creek, Michigan, during the early part of September to study its operation and serve as a judge of their health contest.

Dr. Robert Barrett Lawson, who has recently been in Rochester, N. Y., connected with Strong Memorial Hospital as Resident Physician in Pediatrics and Instructor in Pediatrics at the University of Rochester, has joined the staff of the School of Public Health as Professor of Pediatrics. His work is in cooperation with the program of the N. C. State Board of Health and Duke University for postgraduate instruction of selected groups of physicians, which will be carried out at Duke University during the fall and spring quarters. During the winter term, Dr. Lawson will teach pediatrics in relation to public health in the School of Public Health at the University of North Carolina.

Applications received to date indicate that the enrollment in the School of Public Health will be over 70 for the fall quarter beginning September 24, 1940.

NEWS NOTES FROM THE STATE BOARD OF HEALTH

In view of some misunderstanding that has arisen regarding the preparation and sale of sandwiches in drug stores and similar establishments, Dr. Carl V. Reynolds, State Health Officer, has issued the following statement on this subject.

"In as much as many drug stores now prepare and sell sandwiches and because these same establishments in some instances do not regard themselves as restaurants and have complained because they have been inspected and rated as such, an explanation may help to clarify misunderstandings.

"The Hotel and Cafe Law states that 'The term restaurant as used in this act shall include lunch counters, cafes and all other establishments whatsoever where lunches, meals or food in any form are prepared for and (or) served to the public for immediate consumption.'

"Following an inspection, a placard showing the sanitary grade determined is required to be posted by the proprietor."

AMERICAN COLLEGE OF PHYSICIANS OF NORTH CAROLINA

The 1940 Regional Meeting of the American College of Physicians of North Carolina was held in Chapel Hill October 11 and 12. The program which was presented is as follows:

Friday Afternoon, October 11, 1940

2:30 o'clock

(Auditorium, Medical Building)

Symposium on Cholecystic Disease

1. Etiology and Pathology of Cholecystic Disease.
   Dr. Edward J. Wannamaker, Charlotte, N. C.
2. Symptoms and Signs.
   Dr. Sidney F. LeBauer, Greensboro, N. C.
3. Roentgenologic Consideration.
   Dr. W. T. Rainey, Fayetteville, N. C.
4. Laboratory Consideration.
   Dr. E. B. Craven, Jr., Lexington, N. C.
5. Diagnosis (Correlation of History, Physical Examination, Laboratory and X-Ray Evidence).
   Dr. Wingate M. Johnson, Winston-Salem, N. C.
6. Differential Diagnosis.
   Dr. Walter R. Johnson, Asheville, N. C.
7. Management.
   Dr. Julian M. Ruffin, Durham, N. C.

Friday Evening, October 11, 1940

7:00 o'clock

Dinner, Carolina Inn

Toastmaster — Dr. Charles Hartwell Cocke, Asheville, N. C., Governor for North Carolina, American College of Physicians.

Address: "Recent Trends in Postgraduate Medical Education."—Dr. James D. Bruce, Ann Arbor, Mich. Vice-President of the University of Michigan and President of the American College of Physicians.

Saturday Morning, October 12, 1940

9:00 o'clock

1. A Report of an Unusual Case of Leukemia.
   Dr. K. P. Turrentine, Kinston, N. C.
2. The Psychoneuroses.
   Dr. Frederick R. Taylor, High Point, N. C.
3. Fatigue.
   Dr. James D. Bruce, Ann Arbor, Mich.
4. Recent Advances in Diseases of the Chest.
   Dr. S. M. Bittinger, Black Mountain, N. C.
5. Phytobezoars with Case Report.
   Dr. James H. McNeill, North Wilkesboro, N. C.

Dr. Charles Hartwell Cocke is Governor for North Carolina, and Dr. Paul F. Whitaker is Chairman of the Program Committee.

SOUTHERN MEDICAL ASSOCIATION

The Thirty-Fourth Annual Meeting of the Southern Medical Association will be held in Louisville, Kentucky, November 12-15.

MEMORIAL HOSPITAL DEDICATED

The new Memorial Hospital at Charlotte was dedicated by Governor Hoey on October 1. The Governor commended the city on obtaining the 335-bed hospital, which was built with private donations and a PWA grant, and paid tribute to the late James B. Duke and the Duke Foundation.

NINTH DISTRICT MEDICAL SOCIETY

The fall meeting of the Ninth District Medical Society was held in Mooresville at the First Presbyterian Church on September 26. The following papers were presented:

1. "Thrombocytopenia with Leukopenia of Unknown Origin"—Dr. John W. Ervin, Morganton, N. C.
   Discussion: Dr. Alfred Blumberg, Asheville, and Dr. T. D. Sparrow, Charlotte, N. C.
2. "Why a Health Department"—Dr. Carl V. Reynolds, State Health Officer, Raleigh, N. C.
   Discussion: Dr. W. G. Byerly, Lenoir, N. C., and Dr. C. W. Armstrong, Salisbury, N. C.
3. "Pituitary Adenomata"—Dr. J. P. Rousseau, Winston-Salem, N. C.
   Discussion and Case Report: Dr. Dermot Lohr, Lexington, N. C.
4. "The Physicians' Duties for Mobilization under the Selective Service Act"—Col. John H. Sturgeon, Medical Corps, U. S. A., Fort Bragg, N. C.
5. "Some Complications of Pregnancy" — Dr. Creighton Wrenn, Mooresville, N. C.

Following dinner at 7:00 p. m., Dr. D. Sergeant Pepper, of the University of Pennsylvania, spoke on "The Use of Sulfapyridine and Sulfathiazole in the Treatment of Pneumonia". Officers of the society are Dr. W. H. Kibler, Morganton, President; Dr. W. D. McLelland, Mooresville, Vice President; and Dr. J. Sam Holbrook, Statesville, Secretary-Treasurer. Dr. I. E. Shafer of Salisbury is District Councillor.

NORTH CAROLINA EYE, EAR, NOSE AND THROAT SOCIETY

The sixth annual convention of the North Carolina Eye, Ear, Nose and Throat Society was held at the Robert E. Lee Hotel in Winston-Salem on September 26. Guest speakers were Dr. William Thornwall Davis of Washington, who presented a paper on "Physiotherapy in Ophthalmology" in the morning and another on "Medical Ophthalmology" in the afternoon; and Dr. Edward A. Looper of Baltimore, who gave illustrated talks on "Cancer of the Larynx" and "Laryngeal Tuberculosis".

At the business session Dr. M. R. Gibson of Durham was elected president; Dr. Thomas C. Kerns of Durham, vice president; and Dr. V. F. Couch of Winston-Salem, secretary-treasurer. The society voted to change its membership requirements, so that henceforth applicants must have passed either the American Board of Otolaryngology or the American Board of Ophthalmology.

ALAMANCE-CASWELL MEDICAL SOCIETY HONORS DR. MALLOY

At its regular monthly meeting, held on September 10, the Alamance-Caswell Medical Society honored Dr. Stephen A. Malloy of Yanceyville, upon the completion of forty-three years of service to the community. Among the tributes read was a letter from Dr. John W. Harris, Professor of Obstetrics and Gynecology at the University of Wisconsin, which said in part: "I have ridden the roads of old Caswell with him in the day of red mud and dust, and many of our discussions during these journeys gave me a true insight into his wisdom and skill, his high idealism and courage and greatness of heart. I only wish that every young physician could be exposed to the same ennobling experiences that were my good fortune. I know full well how thoroughly he has endeared himself to his patients, not only as their physician but also as their true friend."

The chief speaker of the evening was Dr. Julian M. Robinson of Danville, who paid tribute to Dr. Malloy in the following address:

I never attend a gathering of my profession in your state that I do not feel the atmosphere of cordiality which exists between you, the pleasure you seem to derive in coming in contact with your fellows and the tendency you have to recognize unstintedly merit where it is found. So I am not surprised that you have made this the occasion for honoring one of your members in such a signal but simple manner, which carries with it a sincerity that rings true, a friendship which is felt without words and an appreciation which leaves no doubt as to its genuineness.

For a man to have come into this country, miles from any medical center, with necessarily limited facilities, and to have set up his workshop and to have done his work so well that truly "a beaten path has been made to his door" is an accomplishment of which any man should be proud.

Thirty-six years ago it was my good fortune to make the acquaintance of this man and to be accepted by him in a spirit of friendship which has endured uninterruptedly until this day. I have been called on numerous occasions to assist him in that part of his work for which he was not properly equipped. During that time I have seen many cases with him, some under trying circumstances, but I have yet to see him dodge the issue or attempt to shift the responsibility where it could even remotely have been considered his, nor have I ever had occasion to question his word or his motives.

His patients are his friends and defenders, their devotion touching and beautiful and their faith in him unquestioned. I have never heard among them one word of criticism of his professional ability, his attention, his charges, or his attitude as a friend and counsellor.

His professional ethics have been a model which we would all do well to follow. His qualifications, however, are not limited to the character gems which I have just touched on; but his abilities as a physician, his judgment in handling his cases, his recognition of the limit of his own capabilities and his promptness in coming to a definite decision are noteworthy characteristics of his work.

In his obstetrical work he has a record which is equalled by few, regardless of their training and equipment in this particular line. During the forty-two years of his practice at his present location there have come under his skilful care 3,433 obstetrical cases which have been handled at their homes under conditions which at times were almost unbelievably difficult. During this time he has lost only six mothers, giving him a mortality rate of less than .2 of one per cent.

In the picture I have painted so poorly for lack of words and phraseology you can perhaps visualize the type of man I have in mind. Your society is honored to have him as a member; Yanceyville is proud of being his home; the people of this community are blessed in having him to rely upon, and I am a better physician because of having known him.

A picnic supper was served prior to the meeting by Mrs. S. A. Malloy and Mrs. H. L. Gwynn in the hall of the courthouse.

BUNCOMBE COUNTY MEDICAL SOCIETY

On September 3 the Buncombe County Medical Society had as its guest speaker Dr. E. V. McCollum, of Johns Hopkins University. His subject was "The Contributions of Medical Science to Medicine". A barbecue supper, followed by a short clinical program, was held on September 16 at the Asheville Orthopedic Home.

FORSYTH COUNTY MEDICAL SOCIETY

The September meeting of the Forsyth County Medical Society was a dinner meeting, held at the Robert E. Lee Hotel in Winston-Salem. There was no scientific program, but the meeting was given over to entertainment. Vocal selections were rendered by a sextet from the society. A violin and guitar duet by Drs. Robert and Fred Garvey, a banjo solo by Dr. Tom Benbow, and a violin solo by Dr. Orpheus Wright were features.

MECKLENBURG COUNTY MEDICAL SOCIETY

The Mecklenburg County Medical Society resumed its regular meetings in September. On September 3 Dr. Tom D. Sparrow gave a paper on "Rationale of the Treatment of Goiter"; Dr. Otho Ross spoke on "X-Ray Treatment of the Thyroid"; and Dr. Marvin Scruggs read a paper on "Total Obliteration of the Thyroid in Heart Disease". On September 17 a pediatrics program was held, with three speakers. A paper on "Pediatric Concepts in Child Management" was given by Dr. Jasper Hunt; Dr. John Donnelly read a paper on "Primary Tuberculosis in Children"; and Dr. Robert Moore spoke on "Gonorrheal Vaginitis in Children".

NATIONAL SOCIETY FOR CRIPPLED CHILDREN

The National Society for Crippled Children of the United States of America met at the Battery Park Hotel in Asheville, October 5-10. The North Carolina League for Crippled Children was the host society.

EXAMINATIONS

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY

The written examination and review of case histories (Part I) for Group B candidates will be held in the various cities of the United States and Canada on Saturday, January 4, 1941, at 2:00 p. m. Formal notice of the place of examination will be sent each candidate several weeks in advance of the examination date. No candidate will be admitted to examination whose examination fee has not been paid at the Secretary's Office. Candidates who successfully complete the Part I examination proceed automatically to the Part II examination held in June 1941.

Candidates for reexamination in Part I (written paper and submission of case histories) must request such reexamination by writing the Secretary's Office not later than November 15, 1940. Candidates who are required to take reexaminations must do so before the expiration of three years from the date of their original examination.

The general oral and pathological examinations (Part II) for all candidates (Groups A and B) will be conducted by the entire Board, meeting at Cleveland, Ohio, in June 1941, immediately prior to the annual meeting of the American Medical Association.

Application for admission to Group A, Part II examinations must be on file in the Secretary's Office not later than March 15, 1941.

After January 1, 1942, there will be only one classification of candidates, and all will be required to take the Part I and Part II examinations.

For further information and application blanks, address Dr. Paul Titus, Secretary, 1015 Highland Building, Pittsburgh (6), Pennsylvania.

INTERNATIONAL MEDICAL ASSEMBLY

The Twenty-Fifth International Medical Assembly of the Inter-State Postgraduate Medical Association of North America will be held in Cleveland, Ohio, October 14-18.

NEWS NOTES

In the nationally syndicated column "Let's Explore Your Mind" by Albert Edward Wiggam, D. Sc., the following answer was given to the question: "Should children be told both the good and bad things they have inherited?":

"I am a hard-boiled believer in heredity (in environment, too, for that matter) but I think the less that most people worry about their heredity the better. It is a terribly hard thing to tell what a particular individual has inherited and what is due to his environment. Dr. William Allan, of Charlotte, N. C., is doing some of the most important work on human heredity in the world and, no doubt, children who have inherited certain diseases should be warned not to marry persons who have inherited the same diseases. We may soon be able to advise about the heredity of cancer, tuberculosis, feeblemindedness and some forms of insanity—but only in exceptional cases can a forecast be made with much certainty."

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Dr. J. T. J. Battle, Director of the Jefferson Standard Life Insurance Company, died on September 29 in Greensboro.

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Dr. Z. M. Caviness, of Raleigh, President of the American College of Proctology, attended the 1940 session of that organization in Chicago October 1-4.

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Dr. C. S. McLaughlin was presented a gold watch on his seventieth birthday by the Mecklenburg County Medical Society, according to the custom of the society.

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Edward Tankersley, son of Dr. J. W. Tankersley of Greensboro, was killed in a plane crash near Dallas, Texas, on October 2.

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Dr. R. B. Davis, of Greensboro, announces the association with him of Dr. Edwin W. Vaughan in Internal Medicine and Allergy.

COURSE FOR MEDICAL SECRETARIES

A course for medical secretaries is offered this year by Lees-McRae College at Banner Elk. Two years of curriculum in the college and at least six months of theoretical and practical work at Grace Hospital are requirements for graduation, and students are graduated only when they can receive an unconditional recommendation for a position. Only a limited number of selected students are admitted to the course.

A CORRECTION

Through an error of the stenographer of the Section on Public Health and Education, Dr. R. W. Graves was given credit for discussing the paper on "Prevenception" which appeared in the September issue of the **North Carolina Medical Journal.** The discussion was given by Dr. R. A. Ross of Durham.

Proceedings of the Thirteenth Annual Meeting of the

North Carolina Public Health Association

Pinehurst, North Carolina, May 13, 1940

MONDAY MORNING SESSION

May 13, 1940

The opening session of the North Carolina Public Health Association convened at ten twenty-five o'clock, The Carolina, Pinehurst, North Carolina, Dr. A. H. Elliott, President, presiding.

President Elliott: The meeting will please come to order.

The first paper for this morning is by Dr. Walter Wilkins, "The North Carolina Coordinated School Health Program."

. . . Dr. Wilkins then presented his prepared paper.

President Elliott: The next paper on the program is "Legal Problems of the Health Officer," by Mr. George B. Patton, Assistant Attorney General.

. . . Mr. Patton then presented his prepared paper.

President Elliott: Before I announce the subject of the next paper, I would like to take this opportunity to appoint two committees, and make one announcement.

On the Nominating Committee I would like to appoint Dr. Hamilton, Dr. Hege and Dr. Foster.

Committee on Resolutions, Dr. Sisk, Dr. Bulla and Dr. McPheeters.

The announcement I would like to make is that copies both of the old constitution of our organization and of the proposed new constitution will be available as you leave the hall. We will take action on that matter this afternoon.

The next paper is on the "Evaluation of Present Regulations Regarding Quarantine, Isolation, Placarding and Reporting in the Control of Communicable Disease," by Dr. J. C. Knox of Raleigh.

. . . Dr. Knox then presented his prepared paper.

President Elliott: In appointing committees a minute ago I failed to announce that the Committee on the Constitution and on the proposed affiliation with the American Public Health Association consists of Dr. Richardson, Chairman; Dr. Carlton and Dr. Norton. I would like to suggest that after you glance over these proposed changes, if there are any recommendations that you feel you would like to make, that you see one of those three committeemen during the lunch hour.

The next paper, is "Public Health Aspects of Bathing Pool Control," by Professor H. B. Gotaas of Chapel Hill.

. . . Professor Gotaas then presented his prepared paper, following which the meeting adjourned at twelve-thirty o'clock.

MONDAY AFTERNOON SESSION

May 13, 1940

The session convened at two-twenty o'clock, Dr. W. P. Richardson, Vice President, presiding.

Chairman Richardson: The second session of the North Carolina Public Health Association will come to order.

The first paper on the program is by Dr. L. L. Parks of Jacksonville, Florida, entitled, "Preparation and Value of Annual Reports."

. . . Dr. Parks presented his prepared paper.

Chairman Richardson: The next paper on the program is by Dr. D. F. Milam of Chapel Hill, the International Health Division of the Rockefeller Foundation, on "The Nutrition Survey."

. . . Dr. Milam presented his prepared paper.

Chairman Richardson: The next paper on the program is by Dr. T. G. Faison of Winton. He will discuss, "Planning the Small County Venereal Disease Program."

. . . Dr. Faison presented his prepared paper.

Chairman Richardson: The next item on the program is a very important business session. First is the report of the Committee on Retirement Plans. Unfortunately Dr. C. C. Hudson of Greensboro, who is chairman of that Committee, has been ill, and not able to get the Committee together prior to this meeting.

However, copies of the retirement plan proposed for school teachers have been secured, and contact is being established with some of the groups in Raleigh which are considering retirement plans for all state employees. There is no definite progress to report as far as I know, and the Committee is still trying to stay on the job to fit any plan of the health officers into whatever general state scheme may be worked out.

We shall be glad to have discussion of retirement plans, or any suggestions, if any of you would like to make them. I am sorry that we don't have more of a report from that Committee. If there is no discussion of the retirement plans at this time, I shall ask Dr. Elliott to make a report on behalf of the Executive Committee.

President Elliott: I have been requested to announce that I received, prior to the ten-day limit, an application from sanitarians and an application from the public health nurses for the formation of a section for those two groups in the proposed Association of Health Workers. One of the provisions of this proposed constitution is that ten days prior to any annual meeting, any section may make application for the formation of a section for their group.

The Executive Committee has agreed, and it hereby recommends that such sections be formed.

Chairman Richardson: Thank you, Dr. Elliott.

Is there any discussion of the recommendation of the Committee?

Dr. Edwin N. Booker (Selma): I want to say that I am heartily in accord with Dr. Elliott's suggestion that a section for sanitarians and a section for nurses be created. I feel that we now have a sufficient number of both nurses and sanitarians to make a very interesting, instructive, and helpful section for both divisions of public health work. A great many of our sanitarians and nurses are now products of the public health schools, and I can think of nothing that would be more helpful than to have meetings such as this as a refresher course.

Finally, I think that all these special sections would result in better work, better understanding, better education, and greater loyalty to the cause in which we are all interested. Therefore, I would like to move the adoption of the recommendation made by Dr. Elliott and this committee that these two sections be formed.

Dr. S. B. McPheeters (Goldsboro): I second the motion.

. . . The motion was carried.

Dr. R. E. Fox (Raleigh): In the event that this proposal goes through, would it not be necessary for the health officers also to form a section? As I understand, the Executive Committee has no formal request to that effect. Inasmuch as the Executive Committee may take action on that before the next meeting, might it not also be advisable for you to consider the matter of forming a section for secretary-clerks in this organization, if you are branching out into sectional meetings? There are many things which they would like to discuss together and they could make some real contributions to the general sessions.

Chairman Richardson: Dr. Fox, would you like to make a motion that in the event that the health officers and clerks make application, this Association approve the formation of sections for health officers and clerks? Perhaps that would make it somewhat official.

. . . The motion was made and carried.

Chairman Richardson: In order to facilitate the functioning of these sections, I should like to appoint some temporary chairmen who will have the responsibility of conferring with their respective groups in regard to getting a permanent chairman and secretary, and cooperating with the program committee in working out a program for the next sectional meetings. These chairmen will use their own judgment and that of their groups as to whether they shall get together while we are here in Pinehurst, or at some future time that is more convenient—perhaps in the case of the state nurses, at the state nurses' meeting. I shall appoint Dr. C. N. Sisk as temporary chairman of the health officers' section; Mr. Walter Stallings of the Guilford County Health Department as temporary chairman of the sanitarians' section; Mrs. Guffey of the State Board of Health Nurses as temporary chairman of the nurses' section; and Miss Stanley of Winston-Salem, as temporary chairman of the section of clerks and secretaries.

Some time prior to the meeting at Greensboro last year, in response to rather definite expressions of opinion from the Association, the President appointed a committee to consider revision of the Constitution and By-Laws.

The Committee presented a report at the meeting at Greensboro, and requested, or recommended, that in order to give the membership more time to consider it, it be carried over to this year. One or two suggestions were made at this time, and they were incorporated into a draft which was sent around to each health department some ten days or two weeks ago.

Since that time a few additional suggestions have been made and accepted by the Committee, and at this time the Secretary will read the report of the Committee on Constitution and By-Laws.

May I make one explanation: This is simply a revision of our old Constitution of the same North Carolina Public Health Association, and is not anything in the way of a new formation.

Secretary Norton: The basis of this revision, as Dr. Richardson says, is the Constitution and By-Laws of the North Carolina Health Officers Association published in the **Health Bulletin** for July, 1911.

I will not read the entire wording here, but will read only the changes.

"Preamble. In order to carry forward and enlarge the services of the North Carolina Health Officers Association organized June 20, 1911, and since that time in continuous active operation protecting and promoting public health, providing for scientific advancement of members, and extending and developing the public health movement. there is hereby formed this Association of Public Health Workers."

It has been suggested that Article II be Article II of the original Constitution. "Article II. The purpose of this Association shall be to bring into one organization the public health workers (instead of just officers) of the State of North Carolina, so that by regular meetings and interchange of ideas they may secure more efficient cooperation, and uniform enforcement of sanitary laws and regulations, and for the better dissemination of such knowledge as will make more effective the opinions of the profession in all scientific, legislative, public health, material and social affairs."

Then it was suggested that under active members there be inserted the words "of good moral and professional standing."

Under officers, it has been suggested that since it has been the custom of this Association not to have a President-Elect, that be stricken out; so that it would read: "The officers of the Association are a president, a vice-president, and a secretary-treasurer," and so on down to the last sentence in that paragraph. The last sentence in the paragraph will be stricken out. The sentence reads: "A representative to the Governing Council," and so forth.

Then on page 2, strike out the entire paragraph 4.

Under Article IV, Executive Committee, there are a few changes suggested, and I will read those. "The Executive Committee shall consist of the latest living past-president, the president—" (It is understood that the president of the Association is, naturally, chairman of the Executive Committee, and it was not felt that it was necessary to say it.) Then strike out president-elect, and so on down to the next sentence. "The three members-at-large shall serve for three years each, with overlapping terms, on being elected" ("appointed" being stricken out and "elected" inserted) "each year by the Association" (instead of by the president). Those are the only changes in that paragraph.

Under Article V, the first paragraph is omitted, and the next paragraph, in regard to the Executive Committee, is intended to follow what I have just read about the Executive Committee.

Article VI: No changes.

Article VII: No changes.

Article VIII: The last sentence under No. 3 in Article VIII is: "All vacancies other than that in the office of President shall be filled through appointment by the President with the approval of the Executive Committee." This is changed to read: "All vacancies other than that in the office of President shall be filled through appointment by the Executive Committee."

Then, under By-Laws, Article I, after the first paragraph, this sentence is inserted: "All persons in attendance shall have the privilege of the floor."

In the next paragraph, "Special meetings of the Association may be called at any time by the President," is changed to read: "Special meetings of the Association may be called by the Executive Committee," and so on.

Under Article II there are no changes.

Under Article III, all except the first sentence is omitted.

Article IV: There are no changes in the first paragraph.

In the second sentence of the second paragraph, which reads, "Membership Committee shall consist of three members or more of the Association, including the Secretary-Treasurer, who shall be an ex-officio member and shall be Chairman of the

Committee. All applications received for membership shall be referred to the Membership Committee . . .", the rest of that sentence has been changed to read: "which shall pass on eligibility and refer the names to the Executive Committee for election."

There are no other changes in that article.

Article V: No change.
Article VI: No change.
Article VII: No change.
Article VIII: No change.
Articles IX and X: No change.

The Committee recommends the adoption of this Constitution as it now is. There may be other amendments which someone would like to propose.

Chairman Richardson: I may say that since the impact of the effect of any changes in the Constitution might be a little more keenly felt by the State Board of Health and by some of us out in the field away from the center of things, this Constitution has been discussed with Dr. Reynolds, the health officer, and with Dr. Cooper, the assistant health officer, and they have authorized me to announce that it meets with their approval so far as the State Board of Health is concerned.

We want to have full consideration of this. Shall we have a motion on the adoption of the Constitution, or would you like to take it up section by section?

Dr. R. S. McGeachy (New Bern): I move the adoption of it as a whole.

Dr. N. T. Ennett (Greenville): I second the motion.

Chairman Richardson: You have heard the motion and the second. I would like to have full discussion because this is a considerable revision, and we want everybody to understand it.

Dr. R. E. Fox (Raleigh): In this preamble to the Constitution in the sentence which reads: "In order to carry forward and enlarge the services of the North Carolina Health Officers' Association, organized June 20, 1911", there is no reference to the fact that the name of the organization was later changed. Shouldn't there be inserted something to the effect, "and as amended April 24, 1922, to become the North Carolina Public Health Association"? It might be of historical interest a hundred years from now.

Chairman Richardson: Perhaps you would like to suggest that as an amendment to Dr. McGeachy's motion?

Dr. Fox: I would like to suggest that as an amendment to the preamble to the Constitution.

. . . The amendment was duly seconded.

Chairman Richardson: Dr. McGeachy, do you accept that amendment?

Dr. McGeachy: Yes.

The motion as amended was passed.

Chairman Richardson: We will now have the report of the Nominating Committee, Dr. Hamilton.

Dr. Hamilton: The Committee wishes to report the following nominations:

For President: Dr. John W. Williams.
For Vice-President: Dr. R. E. Rhyne.
For Secretary-Treasurer: Dr. John Anderson.

Chairman Richardson: You have heard the nominations. I believe it is permissible to have nominations from the floor. We will pause for a moment to see if there are any further nominations.

Dr. McGeachy: I move that the nominees be elected.

Dr. A. C. Bulla (Raleigh): I second the motion.

. . . The motion was carried.

Chairman Richardson: Is there any other business to come before us this afternoon?

Dr. N. T. Ennett (Greenville): Mr. Chairman, this is a little out of order, and perhaps no action at the moment is appropriate, but in view of the fact that we have a coordinating agency cooperating with the educational personnel of North Carolina, it seems to me that it would be well to invite them into membership in this organization. I presume they will be eligible now as associate members. Perhaps it might be proper to amend the section on active members to permit their membership. At least, it seems to be worthy of consideration.

Dr. Hamilton: Mr. President, I would like to move that the Secretary be instructed to make available to each member of the Association a revised copy of the Constitution and By-Laws.

Dr. Foster: I second the motion.

Chairman Richardson: All in favor of Dr. Hamilton's motion say "Aye"; all opposed, "No." It is carried, and the Secretary will take note.

I may say that I think the membership qualifications are sufficiently broad that there is no necessity to change them. They include not only health workers but those interested in public health.

We will ask Dr. Sisk, chairman of the Resolutions Committee, if he has a report.

Dr. Sisk: Mr. Chairman, the other members of the Committee haven't been available, so I am going to take the responsibility of offering the following resolution:

First, that we extend the thanks of this Association to Drs. Farrell, Washburn, and Milam, of the International Health Board, for their attendance and contribution to our program, and that through them we thank the International Health Board for the contributions they are making in the nutritional program, and in the promotion of public health work in North Carolina.

Second, that we extend the thanks of the Association to the management of the Carolina Hotel for entertainment.

Third, that we ask the Secretary to write to Dr. J. A. Morris and express the regrets of the Association of his inability to attend this meeting, and the hopes of the Association that he will be able to attend in the future. This is a recognition of the long service that Dr. Morris has given in the field of public health.

Chairman Richardson: You have heard the report of the Resolutions Committee. What is your pleasure?

Dr. Ennett: I move its adoption.

Dr. R. L. Carlton (Winston-Salem): I don't think this Association has ever gone on record as expressing in any way publicly its approval of the contribution which the Smith Reynolds fund is making to our program for venereal disease control in this state, and I think that it would be very appropriate if that would be included in the resolutions today.

Chairman Richardson: Dr. Sisk and Dr. Ennett, is that agreeable with you that we include that in the vote?

Dr. Sisk: Mr. Chairman, as far as I am concerned, I am very glad to accept that, but I think it is proper that we call on the other two members to find if they have any resolutions they wish to include.

Dr. Ennett: I will second what he said.

Dr. McPheeters: I am sure that this organization will not want to overlook the fact that Dr. Sumner, health officer of Buncombe County, has died since the last meeting of this Association.

Chairman Richardson: Dr. Sisk, does it meet with your approval to include a statement on Dr. Sumner?

Dr. Sisk agreed and the motion was carried.

Dr. T. O. Coppedge (Nashville): Mr. President, we had a very interesting and instructive paper read by Dr. Sisk this morning. Included in that paper were some recommendations which were full of common sense, and I am satisfied that many of the men here would be glad if they received some consideration. I would like to make a motion that the Chair appoint a committee to confer with the state epidemiologist, Dr. Knox, to see if those recommendations can be put into use.

Chairman Richardson: Is there a second to Dr. Coppedge's motion?

Dr. Williams: I second the motion.

. . . The motion was carried.

Chairman Richardson: I am going to leave to our President the task of appointing that committee.

Dr. McGeachy: Will the membership of all colored public health workers and others who are devoting their entire time to it be eligible to membership in this Association? I don't see why they shouldn't.

Chairman Richardson: There is nothing, Dr. McGeachy, said about color or race in the Constitution as I have seen it.

Is there any further matter to come before us? If there is no further business we stand adjourned until eight o'clock tonight.

. . . The meeting thereupon adjourned at four-fifty o'clock.

MONDAY EVENING SESSION

May 13, 1940

The meeting convened at eighty-forty o'clock, President Elliott presiding.

President Elliott: The meeting will please come to order.

Secretary Norton: While we are waiting for Dr. Large, who was expected to preside this evening, we will go right ahead and have the President's Address by Dr. Elliott.

President Elliott: Before I read the little I have, I want to take this opportunity to thank everyone who helped with our program all during the year, especially today. I thank all of those who appeared on the program, served on committees and helped in any way, and I especially want to thank our Secretary, Dr. Norton, for all of the work was left to him.

. . . President Elliott then presented his prepared address.

President Elliott: May I call on Doctor George Cooper to present the speaker of the evening?

Dr. Cooper then introduced Dr. Ben E. Washburn, who spoke on some phases of public health work in the Caribbean region.

President Elliott: Doctor Washburn, on the part of our organization, I want to thank you sincerely for that most interesting talk.

After Dr. Norton makes some announcements, the program will be turned over to Doctor Symington for entertainment.

. . . After announcements by Doctor Norton, the meeting adjourned at nine-forty o'clock for entertainment.

BOOK REVIEWS

A Textbook of Medicine (By American Authors): Edited by Russell L. Cecil, A.B., M.D., Sc.D. Professor of Clinical Medicine, Cornell University Medical College; Associate Attending Physician, New York and Bellevue Hospitals, New York City. Associate Editor for Diseases of the Nervous System; Foster Kennedy, M.D., F.R.S.E. Professor of Clinical Neurology, Cornell University Medical College; Attending Physician, New York Hospital; Visiting Physician in Charge, Neurological Service, Bellevue Hospital; Consulting Physician, New York Neurological Institute. Fifth Edition, Revised and Entirely Reset. 1744 pages with 173 illustrations. Philadelphia and London: W. B. Saunders Company, 1940. Cloth, $9.50.

That the cordial reception given the first edition of this textbook was well deserved is proved by the fact that it has gone through five revisions. The fifth edition, just off the press, is literally up to the minute in its contents. It is impossible, of course, to begin to review a book of this kind at length; and this textbook is now so well and so favorably known that, in the stereotyped formula, it needs no introduction to an audience of American doctors. It is of particular interest to North Carolina medical men to know that Dr. Frederic M. Hanes is one of the contributors. A number of other North Carolinians who are living in other states are also represented.

It is hard to see how the whole field of medicine could have been covered so thoroughly and so authoritatively, and how contributions from so many different authors could have been assembled within such a short space of time that all could be up to date. This book can be highly recommended as a textbook for students and as a postgraduate course for practitioners.

Gynecological and Obstetrical Pathology with Clinical and Endocrine Relations. Emil Novak, M.D., D.Sc., (Hon. Dublin), F.A.C.S., Associate in Gynecology, The Johns Hopkins Medical School; Gynecologist Secours and St. Agnes Hospitals, Baltimore. Pp. 496, with 427 illustrations. Philadelphia: W. B. Saunders Co.

This work should be widely welcomed, because it covers a subject which is extremely important, and one about which not much has been written. As the author states in his preface, he has made it sufficiently short to be of value to the busy practitioner and full enough to convey the present conception of what is known about the physiology and morbid anatomy of the subject to the student of research or the teacher.

The illustrations are clear and numerous, but the busy gynecologist would be grateful for more cuts showing the gross pathology, as this more often determines the final therapeutic procedures than does the microscopic pathology.

Because of the many changes in the normal structures involved in such a study, it is essential that these be well pointed out before the pathological changes can be thoroughly appreciated; for this reason this book is of necessity a voluminous work. It is hard to conceive of an improvement.

Neoplastic Diseases, A Treatise on Tumors. By James Ewing, M. D., Professor of Oncology at Cornell University Medical College, New York City; Consulting Pathologist, Memorial Hospital. Fourth Edition. Pp. 1160. Philadelphia and London: W. B. Saunders Company, 1940.

During the last decade notable additions have been made to the knowledge of neoplastic diseases. To keep up with these changes many sections of the book have been revised and some chapters have been completely rewritten. Considerable old material and references have been omitted, and discussions of debatable tumors and controversial reports have been shortened to make room for the new material. The book admirably fulfills its object of presenting the main features of the origin, structure and natural history of tumors. To those who are acquainted with previous editions this work needs no introduction.

New and Nonofficial Remedies, 1940, containing descriptions of the articles which stand accepted by the Council on Pharmacy and Chemistry of the American Medical Association on January 1, 1940. Cloth. Price. postpaid, $1.50. Pp. 656-LXVIII. Chicago: American Medical Associatiion, 1940.

Each year a revised list of the articles which stand accepted by the Council on Pharmacy and Chemistry of the American Medical Association as of January first is published in book form under the title of "New and Nonofficial Remedies." The book contains the descriptions of acceptable proprietary substances and their preparations, proprietary mixtures if they have originality or other important qualities, important nonproprietary nonofficial articles, simple pharmaceutical preparations, and other articles which require retention in the book.

A list of articles and brands accepted by the Council, but not described, is included in the book to cover simple preparations or mixtures of official articles (U.S.P. or N.F.) marketed under descriptive, nonproprietary names for which only established claims are made. Diagnostic reagents which are not used in or on the human body, and protein diagnostic preparations are not included in New and Nonofficial Remedies unless the determination of the status of these products by the Council has been requested by the distributor: If such products are found to be marketed in accordance with the Council's rules, they may be included in the list of undescribed, but acceptable articles.

New and Nonofficial Remedies is a practical and condensed text of pharmacology and therapeutics; it contains scientifically elaborated standards for all accepted nonofficial drugs; its Index to Distributors is a list of manufacturers, a large number of whose products have met the Council's high standards; its Bibliographical Index is a storehouse of references to reports which have been made mainly on unaccepted and unacceptable drugs; its prefatory material contains the Council's "Rules," a time-tested and reliable set of basic principles for the furtherance of scientific and rational medicine.

A supplement to the annual volume of New and Nonofficial Remedies is published twice a year to bring up to date such current revisions and additions as have been necessary since its last publication. Every product included in the book is subject to the official rules of the Council. The comments to rules are changed occasionally by way of clarifying interpretation to insure fair consideration of all submitted preparations as new standards are recognized. Such constant and critical consideration of its contents provides the physician with a valuable reference list of acceptable new preparations on which to base his selection for use in treatment according to the established current practices of the profession.

The 1940 New and Nonofficial Remedies, of course, contains the revisions which appeared in the supplements for the 1939 edition, and continues the plan of grouping together articles having similar composition or action under a general discussion. These discussions have undergone considerable revision in the 1940 edition. Further revision of statements regarding the actions, uses, dosage, composition, purity, identity, strength or physical properties of many of the articles has also been necessary in some cases. Noteworthy revisions are those of the chapter on Liver and Stomach Preparations, radically rewritten and including a statement of requirements suggested by findings of the Anti-Anemia Preparations Advisory Board of the U. S. Pharmacopeia; the subsection Tuberculins, entirely rewritten to conform to newer knowledge in this field; and the chapter Allergenic Protein Preparations, the name of which has been changed to Allergenic Preparations. Minor but relatively important revisions are found in the articles: Bismuth Compounds, Serums and Vaccines, and Vitamins and Vitamin Preparations for Prophylactic and Therapeutic Use.

The indices of the new volume of New and Nonofficial Remedies are of the same order and plan as in previous editions. A general index lists accepted articles, including those not described. This is followed by an index to distributors in which appear all the Council accepted articles listed under their respectiive manufacturers. Finally, a bibliographical index is added for listing proprietary and unofficial articles not included in N.N.R. This includes references to the Council publications concerning each such article as has appeared in The Journal of the A.M.A., Reports of the Council on Pharmacy and Chemistry, Propaganda for Reform, Vol. 1 and 2, or Reports of the A.M.A. Chemical Laboratory.

Shock, Blood Studies as a Guide to Therapy. By John Scudder, M.D. From the Surgical Pathology Laboratory of the College of Physicians and Surgeons, Columbia University, and the Department of Surgery, Presbyterian Hospital, New York City. Price $5.50. Pp. 315. Philadelphia: J. B. Lippincott Co.

This widely heralded book has turned out to be somewhat disappointing. It is written in a brief and rather sketchy style, and too frequently the reader is referred to the literature for the illustration of various points. Undue importance is laid on an increase of potassium in the blood in shock, and the treatment recommended by the author is reduction of potassium by the injection of intravenous saline and the administration of adrenal cortical extract. The work of Moon and his collaborators is almost completely ignored, as is the whole vicious circle of shock—capillary atony, with the resulting dilatation of the vessels, increased capillary permeability, stasis of the blood, passage of fluid out of the blood into the tissue spaces, concentration of the blood, and finally death from insufficient circulating blood volume.

It is probable that the second edition will be a very different book.

Annual Reprint of the Reports of the Council on Pharmacy and Chemistry of the American Medical Association for 1939 with the Comments That Have Appeared in The Journal. Cloth. Price, $1. Pp. 205, with 5 illustrations. Chicago: American Medical Association. 1940.

Only seven of the thirty-five reports listed in this annual collected report are of the familiar "Not Acceptable" or condemnatory type. Two reports announce omission of products from N.N.R., one being off the market. The remainder, far superior in bulk as well as in number, are concerned with educational and constructive considerations. This trend has been noticeable in recent years; it reflects the great predominance of the constructive over what may be called the destructive side of the Council's work of promoting rational therapeutics.

The educational reports touch three fields on which lie the front lines of present day therapeutics progress—chemotherapeutics, endocrines and vitamins. Two reports on sulfapyridine deal with the status and Council acceptance of commercial brands. The report on Neoprontosil recognizes that term as the Winthrop Chemical Company's proprietary name for 4-sulfonamide benzene-2-azo-1-hydroxy-7-acetylamino naphthalene-3:6-disodium sulfonate, and azosulfamide as the nonproprietary name for the same substance. The articles on Dilantin Sodium, Sobisminol Mass and Sobisminol Solution are status reports which accompanied the descriptions of accepted brands, a type of article increasingly used by the Council. Dilantin sodium is the new drug used in the treatment of epilepsy and has been accepted by the Council with carefully stated limitations for its use; sobisminol mass and sobisminol solution are new soluble bismuth preparations for use in the treatment of syphilis; they are noteworthy in that sobisminol mass has been shown to be effective when used orally. The reports on racephedrine and nikethamide deal with nomenclature; these terms are recognized as nonproprietary names for racemic ephedrine (the sulfate and hydrochloride are also recognized) and pyridine-8-carboxylic acid diethylamide respectively; the latter was introduced into medicine under the proprietary name Coramine-Ciba and was the subject of a preliminary report by the Council in 1929 (**The Journal**, June 1, 1929, p. 1837).

The status report on questions concerning vitamins compiled by the Cooperative Committee on Vitamins of the Councils on Pharmacy and Chemistry and on Foods is becoming an almost annual event, awaited for the revisions of the "Allowable Claims" found acceptable for the various vitamins. This year's revisions are not extensive but the report is noteworthy for the reemphasis of the Council's stand on the subject of vitamins and vitamin mixtures. Alas, the Council's is but one clear, authoritative voice of rationality in today's whirlwind of polyvitamin and polyvitamin-mineral absurdities foisted on the gullible public by astute and sophisticated advertising technic. The preliminary and supplementary reports by Snell and by Snell and Butt on the new principle for active hemorrhagic diathesis known as "vitamin K" are timely and noteworthy.

The leadership of the Council in matters of endocrine therapeutics and nomenclature is well sustained by such reports as Chorionic Gonadotropin, Assay Standards for Chorionic Gonadotropin, Stilbestrol and the Present Status of Testosterone Propionate: Three Brands, Perandren, Oreton and Neo-Hombreol Not Acceptable for N.N.R. No brand of any of these has been accepted and these reports are excellent justification of the Council's intelligent and well informed conservatism in this as in other matters. (J.A.M.A., 115:154, July, 1940).

Pure Luteinizing Hormone Isolated From Anterior Pituitary Glands

The isolation in pure form of the luteinizing (interstitial cell-stimulating) hormone of the anterior lobe of the pituitary gland of swine was announced in the August 23rd issue of **Science** by Drs. Shedlovsky and Rothen of the Rockefeller Institute for Medical Research, New York, and by Drs. Greep, Van Dyke and Chow of the Squibb Institute for Medical Research, New Brunswick, N. J. The achievement is specially noteworthy because the chemical nature of the endocrine principles of the anterior pituitary gland renders them difficult to isolate and analyze since they are proteins or complex polypeptides which are extraordinarily vulnerable to most types of ordinary chemical manipulation.

Proof of the purity of the luteinizing hormone was established by solubility studies in various buffer solutions, by obtaining electrophoretic patterns employing a Tiselius apparatus and by observations of the sedimentation rates in the ultracentrifuge. From the data thus obtained and from the determination of the diffusion constant, the molecular weight of the pure luteinizing hormone was estimated to be approximately 90,000. Its isoelectric point was found to be at pH 7.45.

Chemical analysis of one specimen of pure hormone showed it to have the following composition: carbon, 49.37 per cent; hydrogen, 6.83 per cent; nitrogen, 14.93 per cent; ash, 0.93 per cent.

Tests of the pure hormone in hypophysectomized twenty-one day old male rats showed that one microgram of hormone nitrogen (6.7 micrograms of hormone) caused a significant increase in the fresh weight of the anterior lobe of the prostate; double this quantity produced an increase in testicular weight. In hypophysectomized, immature female rats, the hormone maintained the interstitial cells. If, however, the pure luteinizing hormone was administered after follicle-growth had been stimulated by follicle-stimulating hormone, it caused the formation of corpora lutea perhaps preceded by ovulation.

The significance of this announcement to workers in endocrinology is that it contributes to the elimination of much of the pre-existing confusion with regard to the possible number and effects of the gonadotropic hormones which have been postulated by earlier investigators. In an earlier paper the Squibb Institute workers announced the separation in nearly pure form of not only a luteinizing (interstitial cell-stimulating) hormone but also a follicle stimulating (gametogenic) hormone from the anterior pituitary gland. It may be assumed that by using the newest tools for physical chemical investigation which were so helpful in the isolation in pure form of one of the anterior pituitary gonadotropic hormones that the other will likewise be obtained as a pure protein.

Thus far it has not been possible to isolate large enough quantities of these pure hormones for clinical studies. This is obviously the next step as soon as satisfactory yields can be obtained. At any rate it seems to have been clearly demonstrated that two gonadotropic hormones can be isolated from the anterior pituitary gland. They are separate chemical entities and act on different structures within the primary sex gland (ovary or testis).

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CLINICAL OBSERVATIONS ON THE LOCAL USE OF SULFANILAMIDE IN DENTISTRY

J. A. SINCLAIR, D.D.S.

ASHEVILLE

The importance of sulfanilamide is perhaps best expressed in the preface of Long and Bliss's recent monograph(1), in which they state: "Six years have passed since Foerster reported upon the use of prontosil in the treatment of a child ill with staphylococcal sepsis. In the intervening period we have witnessed the conquering of streptococcal, meningococcal, gonococcal, pneumococcal, and many other types of infections by means of chemotherapy, and we have seen the development of clinical application of numbers of new sulfonamide-containing drugs. While the period has been brief it has been called 'epochal in the history of medicine'."

Although dentistry has participated in the benefits derived from this miraculous drug, the complete field of its usefulness has not been explored. Since our preliminary reports(2) (3) in 1937, we have used sulfanilamide or one of its derivatives in cellulitis, acute osteomyelitis and in infected compound fractures with amazing results.

Acute necrotic gingivitis (Vincent's infection), which is a mixed infection, does not respond to sulfanilamide in a satisfactory manner. The spirochete is perhaps the organism of importance in this symbiotic group(4). The orthodox treatment is so dependable that any deviation in the treatment of this potentially dangerous infection might result in disaster.

In the treatment of cellulitis, acute osteomyelitis or infected compound fractures where the drug can be placed into the infected area, response is usually dramatic. The value of sulfanilamide in chronic osteomyelitis is questionable.

During the past three years, our clinical observations of the local use of sulfanilamide or its related compound, sulfapyridine, following all extractions and operations justifies our continued use of this drug. No local toxic effect has been noted in a single case. There is a lag in the filling of the socket with granulation tissue in some instances. However, this is only temporary, as the cortical closure of the socket seems to be complete within the normal time. X-rays of sockets thus treated show a normal filling-in of bone substance. No swelling or temperature has been noted following the extraction of teeth, nor has any abnormal healing been observed during this therapy.

Sulfanilamide will not prevent autolysis of the blood clot ("dry socket") when excessive trauma has been produced during an extraction. Circulatory damage influences the growth of granulation tissue into the blood clot, and the clot dissolves before granulation tissue is established, resulting in the so-called "dry socket". Excessive trauma is usually produced while removing teeth with roots embedded in a sclerosed

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Read before the Section on the General Practice of Medicine and Surgery, Medical Society of the State of North Carolina, Pinehurst, May 15, 1940.

1. Long, P. H. and Bliss, E. A.: Clinical Use of Sulfanilamide and Sulfapyridine and Allied Compounds, New York, Macmillan Company, 1939.
2. Sinclair, J. A.: Preliminary Report on the Local Use of Sulfanilamide in the Treatment of Oral Lesions, J. Canadian Den. Asso. 3:571, November, 1937.
3. Sinclair, J. A. and Barker, O. C.: Preliminary Report on Local Use of Sulfanilamide in Treatment of Oral Lesions. Am. J. Orthodontia and Oral Surg. 24:266, March, 1938.
4. Smith, D. T.: Preface to Fuso-Spirochetal Disease, Baltimore, Williams & Wilkins Company, 1932.

area of bone. Interosseous circulation, which influences the growth of granulation tissue, is scant in this area, if present at all(5). Sulfanilamide is unable to prevent the "dry socket" when this condition is encountered, but it does prevent pain, and hastens healing by controlling infection. In these conditions, extractions produce a lesion similar to a compound fracture after it has been reduced.

So far, we have not observed any drug incompatible with sulfanilamide when both are used locally. We have employed dentalone, anesthesin, iodine and subsulphate of iron (Monsel's solution) in conjunction with sulfanilamide without any noticeable tissue damage. However, we received one report from Dr. Conrad L. Inman, of Baltimore, who said that he saw a case in which sulfanilamide in combination with iodoform gauze saturated with dentalone was used in an infected third molar socket, and that there was a very sudden and extensive amount of swelling in the floor of the mouth, followed by a great amount of sloughing. This is the only report of tissue damage that we have received, and it is our opinion that the patient was sensitive to iodoform.

Dr. Inman also reported: "At the same time as the above case, there was another using the same combination of drugs in a similarly infected socket with no apparent deleterious effect."

I also received a case report from Dr. Raymond A. Gates of Eddystone, Pennsylvania, where iodoform gauze saturated with dentalone and sulfanilamide was used and brought relief of pain to a patient within a few hours and complete recovery following four treatments. This patient had required morphine for four days and nights prior to the use of sulfanilamide.

In 1937, we reported our first case in which sulfanilamide was used locally in the treatment of an infected compound fracture and acute osteomyelitis. Since then, we have treated many similar infections with satisfactory results.

Perhaps the greatest clinical evidence of the value of sulfanilamide in dentistry is shown in the experiences of Dr. William Lanier, in charge of the dental clinic at the United States Veterans' Hospital in Oteen, North Carolina. Sulfanilamide was used following extraction of 6,800 teeth for hospitalized patients who were suffering from some form of chronic infection. The great majority of them were tuberculosis patients, who are known to have a low resistance to infection. In a personal communication, Dr. Lanier stated that all lesions healed without complications or pain. Sulfanilamide is used routinely following all extractions, fractures, and osteomyelitis cases in the hospital.

In placing sulfanilamide into the socket of a recently extracted tooth, the condition is neither a true 'in vivo' nor a true 'in vitro', but it is nearer the 'in vitro' state. There is no circulation within the area until the growth of granulation tissue begins, although there is a migration of leukocytes and serum seepage into the area. The placing of a small portion of a tablet into the socket enables it to take up its maximum concentration of sulfanilamide. This maximum saturation of the socket content is maintained by the excess chemical. This is also true of a compound fracture or of osteomyelitis.

We have measured the capacity of many molar sockets and have found the average to be one-half of a cubic centimeter. To bring the concentration of the contents of the socket up to the required 10 mg. per 100 cc. of blood would require only 1/20 mg., or 1/1300 gr. of sulfanilamide. A grain would be 1,300 times the required concentration to inhibit growth, if all the chemical were absorbed at once.

We have used much more than one grain in the socket, and have found no adverse tissue reaction whatsoever. A large portion of a tablet is not advised because it takes up clot space, and as the main function of the clot is to furnish a frame work for the growth of granulation tissue, this might delay the normal filling-in of the socket.

In the beginning, we used a portion of a 5 gr. sulfanilamide tablet placed in the bottom of the socket. We also used pure sulfonamide granules, but our results were not as consistent as with the tablets. The constant oozing of blood might have taken the chemical out of the socket before completion of the initial growth period. "It is striking", Fox(6) writes, "that during the first four or five hours of growth, the sulphanilamide culture grows equally with the control. In other words, although the drug is in solu-

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5. Sinclair, J. A. and Barker, O. C.: Healing of Bone Following Injury, Internat. J. Orthodontia & Oral Surgery, 23:300, March, 1937.

6. Fox, Charles L.: The Significance of the Oxidation of Sulphanilamide During Therapy, Am. J. M. Sc. 199:485, April, 1940.

tion and is readily diffusible, no bacteriostasis occurs until the bacteria are in the logarithmic phase of rapid growth." Of interest also is the well established fact, as expressed by Fox, that "when the relatively low inoculum limit of 100,000 organisms per cc. is exceeded no bacteriostasis can be detected, even with a large excess of sulphanilamide."

Because of its proven wider bacterial influence, we have tried sulfapyridine. Its superiority over sulfanilamide has not been noted, and we have discontinued its use.

The topical use of sulfanilamide has been extensively employed in the medical and dental practice of the Veterans' Administration. Drs. A. M. Wigglesworth and Herman Renkoff(7), of Oteen, have used powdered sulfanilamide as a local application in suppurative otitis media, tuberculous and non-tuberculous. These authors report 19 cases. In the 7 tuberculous cases, treatment ranged from one to two and a half months; four patients have no discharge and three are markedly improved. In the other cases treatment that continued for from one to two and a half months resulted in clearing up the discharge of ten patients, and marked improvement of two.

Drs. Frank W. Schwartz and Isadore Spark of Camp Custer, Michigan(8), have used sulfanilamide locally with success in furuncles, carbuncles, abscesses, trophic ulcers, necrotic lesions, chronic sinusitis, gaping infected wounds, and bed sores.

Jensen, Johnsrud, and Nelson, of the University of Minneapolis Medical(9) School, reported a series of compound fractures which were treated by the local implantation of from 5 to 15 Gm. of sulfanilamide crystals in the wound. In 39 compound fractures and 2 compound dislocations not a single primary infection occurred. Ninety-four open fractures treated by similar methods, but without sulfanilamide, showed a 27 per cent infection rate; there were seven cases of gas gangrene and five amputations were necessary to control infection.

The experiments of Bricker and Graham(10) show that sulfanilamide has an inhibitory effect on wound healing. Their experiment was suggested by the idea that the drug might be used prophylactically before certain operations in which the chance of wound infection might be great. It was desired to determine whether or not this drug had any inhibitory effect on wound healing, especially since antiseptics as a group do have such an effect.

Their experiments revealed that "fibroblastic growth is inhibited and does not reach its maximum velocity until after the fifth day. By the seventh day, however, the wounds of dogs treated with sulfanilamide were but slightly below those of untreated dogs in tensile strength. From the curves obtained one would judge that, had the experiment been carried further, a point would have been reached at which the wounds would have been of equal strength."

Neither Key(11) nor Jensen(9) found from their experiments any inhibitory effect following the local application of sulfanilamide.

From their clinical and experimental observations, Jensen, et al, present the interesting deduction: "Sulfanilamide crystals buried in a wound should dissolve slowly, the drug finding its way into general circulation over a period of many hours. During this time theoretically the serum, hematoma, and local tissues of the wound are saturated with sulfanilamide at 0.8 per cent concentration, the solubility of this compound at body temperature. These considerations suggest that by placing sufficient crystalline drug in the area of contamination a concentration approaching 800 mg. per cent should be maintained for a considerable length of time. In comparison, systemic medication with sulfanilamide attempts to attain only 10 to 20 mg. per cent in the blood. Hence, by local introduction of the drug with subsequent closure of the wound, a concentration eighty times that obtained by systemic medication apparently is assured for a prolonged period in the contaminated area. This concentration is bactericidal for organisms more susceptible to sulfanilamide and, from animal experiments now in progress, appears bacteriostatic even for staphylococcus aureus hemolyticus to prevent infection of compound fractures.

"Actual measurement of the rate of absorption and excretion of sulfanilamide in

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7. Wigglesworth, A. M., and Renkoff, Herman: Sulfanilamide Theraphy, M. Bull. Vet. Admin. 16:400, April, 1940.
8. Schwartz, Frank W., and Spark, Isadore: Sulfanilamide Therapy, M. Bull. Vet. Admin. 16:400, April, 1940.
9. Jensen, N. K., Johnsrud, L. W., and Nelson, M. C.: The Local Implantation of Sulfanilamide in Compound Fractures, Surgery, 6:12, July, 1939.
10. Bricker, E. M. and Graham, E. A.:' Inhibitory Effect of Sulfanilamide, J. A. M. A., 112:2593, June 24, 1939.
11. Key, J. A. and Burford, T. H.: The Local Implantation of Sulfanilamide in Compound Fractures, South. M. J. 33:449-454, May, 1940.

two patients in whom known amounts were placed in surgical wounds reveals that approximately sixty hours are required for the drug to disappear from the blood. Marshall(12) and co-workers' studies of excretion of sulfanilamide show after a single large dose by mouth that practically all the drug is eliminated in twenty-four hours."

Key and Burford(11), using the method of treatment of Jensen, Johnsrud and Nelson, were greatly pleased with the results obtained over a nine months' period. They noted no general or local ill effects from the local use of sulfanilamide crystals in the wounds. In a personal communication Dr. Key states: "I believe that sulfanilamide locally is extremely important as a prevention of infection in compound fractures and in questionable operative wounds. I have even gone so far as to excise localized abscesses and suture the wound after placing sulfanilamide in the cavity and have gotten away with it."

"I am trying to determine whether or not it is of value in chronic osteomyelitis and in acute wounds which are definitely infected. At the present time I have only demonstrated its value in wounds in which the drug is placed as a preventive and which can be sutured. In my opinion the administration of sulfanilamide by mouth has relatively little effect on a local wound infection."

The local application of sulfanilamide in compound fractures, like the local application of the drug into the tooth socket, is similar to an 'in vitro' state. A high concentration is obtained, thereby exerting a higher bacteriostatic or bactericidal effect. Its effect is in line with Long's(13) observations that "high concentrations of sulfanilamide will exert either a bacteriostatic or a bactericidal effect in broth cultures seeded with small inoculums of streptococci, staphylococci, Escherichia coli communis, Escherichia communior, Shigella dispar, Bacillus pyocyaneus, Bacillys proteus, Bacilli aerogenes, pneumococci, Eberthella typhi, paratyphoid bacilli and certain other micro-organisms. These observations lead us to believe that 'in vitro' sulfanilamide may affect a wide range of micro-organisms, and it is likely that its mode of action 'in vitro' is the same regardless of the type of bacterium under investigation."

Colebrook, et al.(14) found that instead of being merely bacteriostatic, a 1:10,000 or 1:18,000 concentration of sulfanilamide was bactericidal in the presence of whole human blood or serum; in blood, inoculations of as many as 15,000 streptococci were destroyed in twenty-four hours.

Conclusions

A partial review of the literature on the value of the local use of sulfanilamide, both as treatment and prophylactic therapy in wounds is given.

Clinical results seem to justify our opinion that a wound treated locally is nearer an 'in vitro' than an 'in vivo' state. A high concentration of the chemical when used locally is maintained over a long period of time, resulting in a tremendous advantage over the systemic administration.

Because of the non-circulatory status of the lesion the result of the systemic administration of the drug in conditions as outlined is questionable.

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12. Marshall, E. K.; Emerson, K. Jr.; and Cutting, W. C.: Para-Aminobenzenesulfonamide Absorption and Excretion: Method of Determination in Urine and Blood, J. A. M. A. 108:953, 1937.
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14. Colebrook, Buttle and O'Meara, (cited by Long and Bliss (1).)

Factors in Disease.—Disease is usually the result not of a single factor but of a combination of factors. Over-emphasis on single etiology of diseases has been the outstanding mistake of medicine during the past half century. The patient's complaint is frequently the result of the additive effect of several types of disability of independent origins Thus circulatory collapse in a postoperative state is often the result of several chemical and physiologic factors. Severe dyspnea can be the result of the combined presence of a slight degree of anemia, rheumatic heart disease and bronchitis. Similarly, ataxia of pronounced degree may be caused by two disturbances of independent nature, such as syphilitic tabes and combined system disease of nutritional origin. A prolonged toxic psychosis following broncho-pneumonia may be brought about only in part by the central effect of the infection. The preexisting personality, alcoholism, and arteriosclerosis can play roles of equal importance in etiology. Hence, real diagnosis requires a painstaking analysis and keen evaluation of the relative role of all the active etiologic factors and all the bodily changes. How nearly correct one is depends on how deeply one wishes to look. To attach a medical label is not equivalent to making a good diagnosis; and correct prophesy of observations in the deadhouse is but an anatomoclinical correlation, and this is not identical with diagnosis of the patient as a psychophysical unit.—Soma Weiss, M.D.: The Medical Student Before and After Graduation, J. A. M. A. 114:1715 (April 27) 1940.

ORBITAL TUMORS AND THEIR SURGICAL TREATMENT

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The problem of determining the cause of a unilateral exophthalmos is one of the most interesting with which the ophthalmologist has to deal and is frequently a diagnostic challenge requiring every available aid. In order to gain a better understanding of the subject the 174 consecutive cases of unilateral exophthalmos caused by tumors and tumor-like lesions encountered at the Institute of Ophthalmology and the Memorial Hospital for the Treatment of Cancer and Allied Diseases during the past seven years have been analyzed.

This series includes only those cases in which the diagnosis was verified by biopsy or other surgical measures. Excluded were cases of non-surgical exophthalmos arising from exophthalmic goiter, arteriovenous aneurysm, sinus mucocele, cavernous sinus thrombosis, oxycephaly, and aneurysm of the ophthalmic artery. Included are 21 lesions which had not produced exophthalmos for one reason or another but which were considered potentially capable of doing so.

The study was undertaken with particular regard to the following factors:

(1) The distinguishing characteristics of the different types of orbital tumors and allied conditions important in differential diagnosis.

(2) The incidence of the various lesions. This is important in diagnosis and cannot be obtained from the isolated case reports appearing in the literature, consecutive cases being indispensible.

(3) The types of treatment indicated, especially from the surgical standpoint.

(4) The prognosis. This too cannot be determined from the literature, as the cases are almost invariably reported a short time after they have been observed and treated. An effort has been made in this study to follow cases long enough to determine their final outcome with some degree of certainty.

There are two conditions which simulate exophthalmos, and these should be ruled out as an initial step in making the differential diagnosis. The first is a unilateral myopia of 25-30 D.; the second, early hyperthyroidism (of which the patient may be unaware), in which the earliest eye manifestation is a retraction of the upper lid due to stimulation of the smooth muscle of Muller. When this is unilateral an exophthalmos appears to exist and can be ruled out only by means of an exophthalmometer.

Cases of slight exophthalmos resulting from the paralysis of one or more of the recti muscles, or from a rectus muscle tenotomized or greatly recessed at the time of a squint operation, should also be ruled out. These conditions may so reduce the retractive influence of the muscles on the eyeball that a proptosis of 2-3 mm. is produced.

It is interesting to note in this connection that if an extra-ocular muscle is paralyzed in the presence of other factors which tend to produce exophthalmos, the protrusion of the eye is greater than that which arises from any one single factor. A five-year old girl with complete paralysis of the left external rectus had an exophthalmos of 5 mm. The primary lesion proved to be an intracranial hematoma which pushed the lateral wall of the orbit inward. This increased the intraorbital pressure and gave rise to an exophthalmos which, in the presence of the paralyzed external rectus muscle, was considerably more extensive than it would otherwise have been.

Sources of Unilateral Exophthalmos

A unilateral exophthalmos produced by a tumor may arise from one of three sources: (1) A lesion primary in the orbit* (109 cases in this series); (2) a lesion in the region contiguous to the orbit (51 cases); or (3) a systematic or distal lesion (14 cases). In this study etiologic classification was made according to this grouping, and the causal lesions are listed in the order of their frequency. From the fact that the series was compiled in part from cases seen at the Memorial Hospital for the Treatment of Cancer and Allied Diseases, the proportion recorded here as arising from extra-orbital and systemic or distal lesions is probably unduly high.

From the Department of Ophthalmology, College of Physicians and Surgeons, Columbia University, and the Institute of Ophthalmology of Presbyterian Hospital. Read before the Section on Ophthalmology and Otolaryngology of the Medical Society of the State of North Carolina, Pinehurst, May 14, 1940.

* Reese, A. B.: Exophthalmos: Its Eye Complications; Its Causes From Primary Lesions in the Orbit; Its Surgery. Arch. Ophth. 14:41-52 (July) 1935.

Exophthalmos from Lesions Primary in the Orbit

Hemangioma		(5 with no exophthalmos)	25
Pseudotumor		(2 with no exophthalmos)	18
†Meningioma			13
Dermoid and epidermoid cysts		(6 with no exophthalmos)	10
Sarcoma			
Lymphosarcoma	5		
Rhabdomyosarcoma	2		
Osteogenic sarcoma	1		
Fibrosarcoma	1		
Myosarcoma	1		
			10
Neurogenic tumors			
Neurofibroma	8	(4 with no exophthalmos)	
Glioma of optic nerve	1		
Neurilemmoma (neurinoma, Schwanoma)	1		
			10
Mixed tumor of lachrymal gland			9
Lymphoma			3
Hematoma			3
Osteoma			1
Xanthoma			1
Fibroma (from tendon sheath)			1
Osteitis fibrosa cystica			1
Lipoma		(no exophthalmos)	1
Lymphangioma			1
Zenker's Waxy Degeneration of rectus muscle			1
Tuberculous dacryo-adenitis			1
		Total	109

Hemangioma. The most frequent cause of proptosis due to a lesion primary in the orbit is hemangioma. Radiosensitive and usually encapsulated, it is fortunately one of the most satisfactory tumors to deal with. It is probably entirely congenital in origin, although it frequently grows so slowly that there is no sign of its presence until the patient is in the second or third decade. In this series the cases ranged in age from four months to fifty-five years. The average was twenty-five years.

Two noteworthy characteristics of this type of tumor are: (1) its failure to affect the motility of the eye, and (2) variations in its size and thus in the extent of the exophthalmos. These variations may be spontaneous, arising from a variable stasis in the venous circulation, or they may be produced by any maneuver which increases the congestion in the jugular area, such as compression of the vein, bending of the head, crying, coughing, etc.

Sometimes the hemangiomatous nature of the lesion is revealed by an extension of the growth sufficiently far forward to be seen subconjunctivally or subcutaneously. In rare instances there may be an associated non-elevated "nevus flammeus" or "port-wine" type of lesion on the lids or face. Although the skin lesion is present from birth it is not until later in life that an exophthalmos occurs from the growth of a hemangioma in the orbit, or that a hemangioma may manifest itself in the choroid, where it often produces glaucoma. Some hemangiomas are quite cirrhous, with few and extremely small blood channels; these may be difficult to diagnose clinically and even microscopically.

Pseudotumor. Although seldom mentioned in the literature, a chronic cellulitis or lymphogranuloma, which is usually called "pseudotumor", was found in this series to be the second most common orbital lesion to produce exophthalmos. It may resemble a real tumor so closely that clinical differentiation is impossible. Of 30 cases analyzed in the literature, 15, or 50 per cent, had had exenteration of the orbit for a supposed tumor which was proved by histological examination to have been a chronic inflammation. Further analysis of these cases revealed the following characteristics:

(1) The average exophthalmos produced was 7 mm.

(2) A firm mass, well-demarcated and discrete, was palpable in the orbit in half the cases.

(3) The vision was affected in two-thirds of the cases and usually returned to normal after regression.

(4) Complete regression, which often proceeded to enophthalmos and sinking of the tarso-orbital fascia, took place usually within four or five months.

(5) Occasionally there was prodromal transitory edema of the lid and conjunctiva some weeks or months preceding the appearance of the exophthalmos.

(6) The condition was never recurrent. (Since the analysis of these cases the writer has had the following experience with a case of pseudotumor of the orbit: M. H., a female, aged sixty years, had an exophthalmos of 5 mm. on the right side, and a mass was palpable through the lower lid and through the upper lid above the inner canthus. Biopsy showed it to be a lymphogranuloma. X-ray was given in fractional doses, and the tumor regressed in four months, with subsequent retraction of the tarso-orbital fascia. The patient was well

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† Not all of these cases were primary in the orbit but due to the difficulty of dividing them accurately it seemed best to discuss them as a group.

for fifteen months, and then the left eye became proptosed 6 mm. A mass was palpable through the lower lid over the outer one-third. X-ray was given in fractional doses and there was complete rgeression in three months followed by retraction of the tarso-orbital fascia. Four months later a smooth, rather firm, non-movable mass, the size of a walnut, appeared in the right frontal region and was shown by aspiration biopsy to be a lymphogranuloma. This regressed in several months. The patient was well for two and a half years and then had an exophthalmos of 4 mm. on the left side. At the same time there was a smooth, rather diffuse, bony-hard mass, measuring 3½ cm. in diameter and elevated about 2 cm., on the left side of the forehead just lateral to the glabella. Roentgenograms revealed an increase in the soft tissue density and a small elevation of the outer table of the frontal bone. An aspiration biopsy showed that the mass was a lymphogranuloma and x-ray was administered in fractional doses. The exophthalmos disappeared in three months but the lump on the forehead required one year for complete regression. A year and a half later a mass measuring 5 cm. developed in the left supraclavicular region and was shown by biopsy to be a lymphosarcoma. This disappeared under x-ray therapy. A year later the patient complained of a swelling of the right foot. This was found to be due to a mass at the brim of the pelvis on the right side which was apparently pressing on the large vessels there. At the same time a mass as large as a good-sized grapefruit was palpable in the right upper quadrant. Under x-ray treatment these masses have disappeared. This last episode was four months ago and the patient is now free of complaints. At no time has the white blood count been increased or showed any abnormal differential count. This, then, is a case of pseudotumor of both orbits, in which the patient subsequently developed tumor masses elsewhere which proved to be lymphosarcoma.)

The most important points in differentiating a pseudotumor from a real tumor are the following:

(1) Primary tumors tend to occur at an early age; the average age for the pseudotumor is forty-five years.

(2) The onset of exophthalmos in primary tumors is insidious and gradual; in pseudotumors it is relatively sudden, the exophthalmos developing within a few weeks in most instances.

(3) Primary tumors of the orbit are never bilateral; pseudotumors affect both eyes in one-third of the cases, the second eye becoming involved within four to nine months after the first.

(4) Primary as well as secondary tumors of the orbit not infrequently show radiographic changes of the orbital bones; pseudotumors characteristically do not.

(5) Primary tumors usually cause no pain and no edema of conjunctiva or lids; pseudotumors cause some pain and some edema in half of the cases.

The microscopic examination of tissue in cases of pseudotumor shows chronic inflammation with certain distinguishing characteristics. There may be fibroblastic repair in all stages, from the denser hyaloid almost anuclear tissue of long standing to the delicate fibroglia and richly nuclear tissue of more recent production. Foci of lymphocytes are scattered through this fibrous tissue and occasionally real lymph follicles with germinal centers are encountered. Blood vessels are plentiful, their intima often showing proliferation to such an extent that the lumen appears almost occluded, and their media and adventitia showing thickening with sclerosis which has sometimes undergone hyaloid degeneration.

The etiology of pseudotumors is not known. There is no evidence clinically or histologically to indicate that they are tuberculous. Some observers believe them to be a very late manifestation of syphilis which has run its course and therefore gives a negative Wassermann. There are reports of regression of the exophthalmos under the usual treatment for late syphilis, but the effect may have been absorptive rather than specific; for the condition when untreated subsides in the course of several months. The histologic characteristics of the lesion, and in particular the vascular changes described above, are not inconsistent with lues but the sum total of evidence is inconclusive.

Two of the 18 pseudotumors of this series had not progressed to exophthalmos. Both of them exhibited diplopia, however, which is mentioned in the literature in about 25 per cent of cases as the first symptom of pseudotumor, preceding the onset of exophthalmos, and indicating that the tumor mass is related to an extra-ocular muscle. Examination of biopsy material not infrequently shows the process to be associated with muscle tissue, and it may be in the extra-ocular muscles that the lesion has its origin. Lesions induced in the orbit by bloodborne diseases, such as metastatic cancer, trichiniasis, etc., usually implant themselves primarily in the extra-ocular muscles.

To sum up, pseudotumor is a clinical and histopathologic entity of unknown etiology. Although the clinical picture may closely resemble that of an orbital neoplasm, the age incidence, onset, course, and duration are characteristic. It may be possible in the future to classify pseudotumors according to etiology; for example, some may be found to be related to lymphogranuloma venereum, others to lymphosarcoma. I have seen one case in a patient who subsequently developed Hodgkin's Disease.

Meningioma. Next in order of frequency as a primary cause of exophthalmos in this series was meningioma, a tumor characteristically insidious in onset and slow in growth. The age of the patients ranged from twelve to fifty-eight years, averaged forty years. In most instances it is impossible to determine from the clinical findings alone whether a meningioma producing an exophthalmos is primary in the orbit or in the cranium; or, if it is in the former site, whether or not it has already extended into the cranium. If primary in the cranium, it often gives no neurological signs; however, the most frequent one and the first to appear is unilateral anosmia. This arises from the fact that the commonest site is the sphenoid ridge, where the tumor is brought into relation with the cribriform plate through which pass the filaments of the olfactory nerve. If the meningioma is primary in the orbit a disturbance of vision followed by optic atrophy is frequently the first manifestation and may precede the exophthalmos by several years. However, the possibility of a meningioma cannot be ruled out because of normal vision and normal fields, as they may persist in the presence of an optic nerve embedded in tumor tissue. Arising as it does from the sheaths of the optic nerve, the tumor lies in the muscle funnel at the apex of the orbit; in this position it is surrounded by the extra-ocular muscles, and their dysfunction is one of its early signs. It is also in close relation to bone, which it tends to invade, producing a hyperostosis; when this occurs in the apex of the orbit, extension is toward the cranial cavity. Close relationship to the optic foramen, moreover, as well as to the superior orbital fissure, further encourages the growth to spread directly to the cranium.

It is not uncommon for symptoms from an optic nerve sheath meningioma to exist for years before the diagnosis is made and treatment instituted. In one of our cases the patient had had poor vision and optic atrophy for five years and an exophthalmos for two additional years before operation.

X-rays are indispensable in diagnosing meningioma, and in the large majority of instances are our only means of determining the status of the lesion. X-ray findings in the 13 cases of this series indicated that the tumor was primary in the orbit in 4, but enlargement of the optic foramen in 2 of these suggested that there had been an extension toward the cranium. In one an exenteration with radical dissection at the apex of the orbit, followed by x-ray therapy given in fractional doses, failed to arrest the lesion. There was a recurrence three years after the operation and the patient died of an intracranial hemorrhage. In the other case there has been a local recurrence in the orbit, but no neurological signs had appeared when the patient was last seen, ten years after the operation. X-ray evidence of meningioma in the other 9 cases was atypical in 2, but definitely indicative of tumor primary in the cranium in 7. Meningioma primary in the orbit, therefore, was the exception in this series, and still more exceptional were cases confining themselves to the orbit without intracranial extension. When primary in the cranium the tumors produced exophthalmos by extension through, or hyperostosis of, the floor of the anterior cranial fossa, or by extension from the middle cranial fossa to the orbit *via* the superior orbital fissure.

Cushing(1) described intracranial meningioma as growing in two ways, either as an irregularly lobulated mass with a small stalk attaching it to the dura, or "en plaque" as a more or less flat and only slightly elevated mass tending to spread over the inner dural surface. The meningiomas arising in the orbit seem more often to grow in the former way, and those extending there secondarily more often in the latter.

1. Cushing, H.: The Cranial Hyperostoses Produced by Meningeal Endotheliomas, Arch. Neurol. and Psychiat. 1922, 8:139-152.

Meningiomas involving the orbit frequently present a serious treatment problem. Exenteration alone is rarely indicated because of intracranial extension or bone involvement. More frequently the situation lies in the domain of the neurologic surgeon as well as the ophthalmic surgeon, and in some instances the former alone would probably give the patient the best chance of recovery.

Hudson and Lundberg(2, 3) have both reported cases of orbital meningioma in which the tumor was incompletely removed, and in which there had been no recurrence approximately six years afterwards. This in no way rules out the possibility of a recurrence, however, for the tumor grows so slowly that it is not uncommon for one to reappear after an interval of many years; and there may be no symptoms for a still longer period, even twenty years or more. One of our cases showed exophthalmos twenty years ago; two years later a Kronlein operation was performed with incomplete removal of the tumor. There was a recurrence, and seven years ago an exenteration was done. Since then there has been a slow but steady regrowth of the tumor, but the patient is still living and well. The tumor now fills the orbit and manifests itself also as a mass in the temporal region. Neurological examination is negative. Another case had the first symptom eighteen years ago (poor vision with optic atrophy) and exophthalmos three years later. Roentgenograms at that time showed that the growth probably began in the orbit, but the optic canal was somewhat enlarged. A Kronlein with incomplete removal of the tumor was performed after another three years. Since then there has been a slow recurrence but the patient is living and well. Exophthalmometer readings taken twice a year have shown an exophthalmos of 10 mm. for the past six years. Neurological examination is negative.

Irradiation was applied to the recurrent tumors in both these cases, by x-ray in fractional doses to one and by radium to the other. Meningiomas are known to be radioresistant, and it is unlikely that the treatments had any material influence on the course of the disease.

Both Schuster(4) and Li(5) have reported instances of the metastasis of a meningioma through the blood stream.

Dermoid and epidermoid cysts usually occupy the orbital margin in the region of the brow temporally or, less often, nasally. Because of their predilection for this forward position they frequently do not produce exophthalmos. In a number of cases, however, they lie more deeply in the orbit or extend from the usual superficial location back along the bony wall to the retrobulbar region and give rise to proptosis. They are congenital and are usually detected in young individuals. The age range in our cases was from four months to thirty-six years, the average being fifteen years. After remaining dormant for years they may begin to enlarge slowly, and will sometimes grow so rapidly in the course of weeks or months as to produce pain. X-rays are frequently of great help in the diagnosis, as the cyst may produce a defect in the adjacent bony wall of the orbit.

Sarcoma of the orbit is as a rule a rapidly growing, highly malignant tumor occurring in very young individuals. Lymphosarcoma is an exception, appearing usually in older persons. Sarcoma of the orbit may arise from a great variety of cell types: connective tissue, muscle, nerve, periosteum, fat, or lymphocytes. In most instances it is growing so rapidly and is therefore so anaplastic that certain identification of the cell type is impossible.

Neurogenic tumors. Of the neurogenic tumors the neurofibroma is by far the most common, and its appearance is so characteristic that diagnosis may usually be made without difficulty. There is the *cafe au lait* pigmentation of the overlying skin, the multiple small neurofibromata, or the multiple pigmented nevi over the skin, and the extensive area locally involved by the tumor which may include not only the orbit but the lids, face, scalp, choroid, ciliary body, and iris, and may even extend into the cranium. The intra-ocular manifestations may produce glaucoma or buphthalmos. This tumor also tends to produce defects in the adjacent bones of the orbit, and x-rays may give valuable information. When the bony defect occurs in the roof of the orbit, the brain may herniate and give rise to a pulsating exophthalmos. In this series the ages varied from four to forty-one years. Half the cases with orbital involvement did not display exophthalmos.

2. Hudson, A. C.: Primary Tumors of the Optic Nerve, Royal Lond. Ophth. Hosp. Rep. 1912.
3. Lundberg, A.: Uber die primaren Tumoren des Sehnerven und der Sehnervenkreuzung, Inaug.-Diss. Stockholm Thesis, 1935.
4. Schuster, E.: Ein Fall von Psammon, Z. Augenheilk, vol. 62, 1927.
5. Li, T. M.: Arachnoid Fibroblastoma of the Optic Nerve, China Med. J. 41, 1927.

Glioma of the optic nerve is an exceptionally interesting condition and should be included in our discussion in spite of its extreme rarity. Composed of neuroglia, it is correctly called "glioma", but there has been some discussion as to whether the type cell is the astrocyte or the oligodendrocyte. Davis favors the former and believes therefore that the tumor should properly be called an astrocytoma. Lundberg, on the other hand, calls it an oligodendrocytoma. Davis also considers the tumor closely related to the neurofibroma with which it may be associated. It is extremely slow in growing and produces exophthalmos gradually in children in the first decade. X-rays may show an enlargement of the optic foramen and deformity of the sella turcica in cases of chiasmal involvement. Vision is usually affected before the onset of exophthalmos.

Verhoeff(6) discusses very interestingly the origin and growth of these tumors. Ordinarily a tumor arises from a small focus and as it grows it pushes aside and invades the surrounding tissue. In the case of glioma, whether it be in optic nerve, brain, or cord, the growth increases in size by causing the preexisting neuroglia in the vicinity of the growth to proliferate. Sometimes this glial proliferation is seen as far forward as the disc and contiguous retina, where in some instances it may reach considerable size and form a white or even a cystic mass; or it may be noted as far back as the hypophysis. Verhoeff's explanation of the proliferation of the neuroglia of the disc and contiguous retina, and perhaps also of the hypophysis, is that some abnormal stimulating factor is supplied in increasing abundance by the actively proliferating neuroglia of the tumor. This would also explain the remarkable statement by Hudson that "in spite of the frequency of incomplete removal, in no single case has a local recurrence in the orbit been recorded." Lundberg tells of two cases in which the tumor was not radically removed and there was no recurrence evident after ten-and-a-half and twenty years respectively. Seefelder has reported one case which recurred after three years, and this is apparently the only case of a recurrence on record.

These tumors may occur in both optic nerves or in the chiasm or brain and the optic nerve. This fact of multiple origins is sometimes important in determining the extent of the surgery required.

Mixed tumor of the lachrymal gland. The large majority of new growths of the lachrymal gland contain tumor tissue which is both ectodermal and mesodermal in origin. These growths are therefore called mixed tumors, and they constitute about 95 per cent of the neoplasms that arise from the lachrymal gland. Pure carcinoma of the gland is extremely rare and it is believed that most of the cases reported in the literature are in reality mixed tumors which have become malignant. Sarcoma of the gland has only been reported twice.

These mixed tumors are probably congenital, although the average age at which they manifested themselves was forty years in this series. They seem to arise from isolated displaced and undifferentiated embryonic rests and not from the developed gland tissue. Because they are potentially capable of forming many types of tissue they naturally vary a great deal in their component structures. The term cylindroma has been employed to designate one particular manifestation of this tumor in which the epithelial element predominates in cylinder formation with myxomatous stroma.

That this tumor occurs in patients middle-aged and older, that it arises from the site of the lachrymal gland, and that it tends to produce radiographic changes indicative of localized defects or hyperostosis of the adjacent bone, serve to make diagnosis relatively easy. Characteristically the tumors seem well encapsulated and not invasive and therefore inherently benign; but, as Sanders(7) points out, they must be viewed clinically as malignant growths because of the extremely high frequency of recurrence after excision, the marked tendency to local invasion not only of the orbital tissue but particularly of the orbital bones, and the frequency of distal metastases (Sanders 33 per cent). Death from intracranial extension is not infrequent (Sanders 42 per cent).

Other lesions. In this series the seven groups described above comprise 87 per cent of the cases of exophthalmos from causes primary in the orbit. Such causes as lymphoma, hematoma, etc., are so rare that they will not be discussed. It is a question, indeed, whether lymphoma and xanthoma should be considered strictly primary in the

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6. Verhoeff, F. H.: The Mixed Tumors of Lachrymal and Salivary Glands. Jour. Med. Res., Bost., 1904-5, 13:319-340.

7. Sanders, T. E.: Mixed Tumor of the Lacrimal Gland. Arch. Ophth. Feb. 1939, 21:239-60.

orbit, as lymphoma may represent an early manifestation of a lymphatic leukemia and xanthoma of the orbit may be considered a part of xanthomatosis from faulty fat metabolism.

Exophthalmos from Lesions Adjacent to the Orbit*

From new growths in naso-pharynx		19
From new growths in sinuses		
Antrum	12	
Ethmoids and/or sphenoids	3	
Ethmoids	2	17
From malignant melanoma of choroid		
Extension from eye to orbit	2	
Recurrent after enucleation	5	7
Extension of epithelioma from lower lid into orbit		
Basal cell	3 (1 no exophthalmos)	
Squamous cell	1	4
Chloroma		1
From new growth of hard palate		1
From nose to orbit via tear sac		1
Mestastatic carcinoma to uvea with orbital extension		1
Total		51

Naso-pharyngeal lesions. The commonest cause of exophthalmos from extension of an extraorbital lesion is a new growth originating in the naso-pharynx. It is anaplastic in nature and may be transitional cell carcinoma, lymphoepithelioma, or lymphosarcoma. According to Martin(8, 9, 10), these tumors advance through the foramen lacerum, come in contact with the internal carotid artery lying in the carotid groove, and extend along this vessel and groove to the superior orbital fissure, through which they enter the orbit.

The primary site is usually on the posterior wall in the region of the naso-pharyngeal tonsil and its lateral extension into the recessus pharyngis, and less frequently it is on the lateral wall. The primary site may still be quite small, even small enough to be overlooked (especially when it is in the fossa of Rosenmuller), after the tumor has already produced orbital symptoms or exophthalmos.

Sinus lesions. New growths of the sinuses which produce exophthalmos do so by direct extension into the orbit. These are also in the nature of anaplastic tumors which may be transitional cell carcinoma, lymphoepithelioma, or lymphosarcoma. In this series the antrum was the commonest primary site of lesions producing exophthalmos, probably because the antrum is the sinus most commonly affected with cancer. Cancer of the ethmoid in all likelihood leads to exophthalmos in a high percentage of cases because (1) only the thin bony lamina papyracea separates the ethmoids from the orbit, and (2) cancer of the ethmoid is frequently associated with infection which sometimes produces an orbital cellulitis.

Eye and lid lesions. Exophthalmos that occurs from the extension of a new growth in the eye or lids is usually not difficult to explain. An exception to this in this series was a case of malignant melanoma of the choroid which became necrotic and in which the necrotic tumor tissue gave rise to a severe panophthalmitis with orbital cellulitis clinically resembling a lesion produced by infection. The interior of the eye could not be seen and the underlying cause could have been overlooked.

The three groups described above comprise 90 per cent of the cases of exophthalmos caused by lesions adjacent to the orbit.

Exophthalmos from Systemic or Distal Lesions.

From metastatic new growths		
From breast (carcinoma)	3	
From suprarenal gland and/or retroperitoneal region (sympathicoblastoma, neuroblastoma)	2	
From thyroid (carcinoma)	1	
From lung (lymphosarcoma)	1	
From tonsil (carcinoma) to orbital bone	1	
From unknown site (carcinoma)	1	9
Hodgkin's Disease:		
To lachrymal gland (no exophthalmos)	1	
To orbital bone (no exophthalmos)	1	2
Lymphatic leukemia		1
Schuller-Christian disease		1
Gumma		1
Total		14

Diagnostic Procedure

The differential diagnosis of unilateral exophthalmos with respect to etiology is simplified by the fact that a large proportion of cases arise from a relatively small number of causes. In this series 147 cases, or 85 per cent, were traceable to only twelve different types of lesions.

X-ray. A roentgenologist can be of immense help in differentiating these orbital lesions, particularly if he is also an ophthalmologist or is familiar with this particular problem. X-rays are also extremely helpful in determining the course of treatment and the prognosis, particularly in showing whether or not bone invasion is present in cases of meningioma and mixed tumor of the lachrymal gland, and in indicating the character of the optic foramen, which frequently signifies whether a meningioma or a glioma of the optic nerve remains entirely in the orbit or has extended into the cranium.

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* According to a personal communication from Dr. R. L. Pfeiffer, the commonest cause of unilateral exophthalmos recorded by the X-ray Department is a mucocele. Such cases, as stated at the outset, were not included in this series.

8. Martin, H. E.: Cancer of the Nasopharynx. To be published.
9. Martin, H. E. and Stewart, F. W.: Advantages and Limitations of Aspiration Biopsy. Amer. Jour. Roentgen., February, 1936, 35:245-47.
10. Martin, H. E. and Ellis, E. B.: Aspiration Biopsy. Surg., Gynec., and Obst., October, 1934, 59:578-89.

Biopsy. In many instances a biopsy is necessary for diagnosis. It is generally believed that the removal of a piece of tissue for this purpose from a surface lesion does not tend to produce metastasis or to increase local dissemination. Orbital lesions, however, lie deep beneath intervening normal tissue and are usually encapsulated. In such cases biopsy by surgical incision may require some dissection into important normal structures and may be followed by unfavorable consequences on the course of the growth. Ewing's(11) objections to surgical biopsies in such instances are that the procedure modifies the clinical setting, breaks down the natural local barriers, favors fungation of the growth through the opening in its capsule into the surrounding normal tissue, and in some instances encourages metastasis. These objections of course are less valid when the indicated therapeutic measures are carried out without delay.

Aspiration biopsy. In many instances surgical biopsies can be avoided by employing aspiration biopsy. By this method, advocated by Martin, it is possible to obtain a histological diagnosis of a tumor in a very short time, and the procedure may be carried out in the clinic or the office under local anesthesia. The pathologist cannot be expected to give as much information from such biopsies as he can from larger pieces of tissue, but it is possible to say in most instances whether or not the tumor is malignant and often what type of tumor it is, particularly if the pathologist has the clinical data at hand and is familiar with the tumors that are to be encountered in the orbit. A granuloma may be diagnosed in this way, and if only blood is aspirated from several sites, a hemangioma can be assumed. A negative report, on the other hand, has little diagnostic value. In a series of over 3,500 cases aspirated at the Memorial Hospital, including material from such regions as the lungs, liver, spleen, prostate, and neck, as well as from the orbit, there have been no untoward sequelae in the form of local damage and no proof of increased local invasiveness or earlier or more frequent metastasis.

The equipment required is an ordinary 18 gauge needle, 5-10 cm. in length, and a 20 cc. record syringe. Glass slides are necessary for smearing the specimen, and a specimen bottle with 10 per cent formalin is needed if a portion of the tissue is to be treated as regular biopsy material.

The technique is to inject novocain locally and make a small incision through the skin at the site of the intended puncture. This opening in the skin facilitates the insertion of the needle and prevents contamination of the aspirated material by surface epithelium. The needle attached to the syringe with the piston closed is inserted until the point is felt to engage the suspected lesion, the piston is partly withdrawn to produce a vacuum, and the needle is then advanced further into the lesion. With the vacuum maintained throughout, and with the point of the needle always within the tumor, the needle is withdrawn somewhat, advanced again, and again somewhat withdrawn. Tissue from the tumor mass enters the needle and is held there by the vacuum. Before the needle is withdrawn completely the piston must be released slowly and the syringe detached. The needle is then withdrawn separately and its contents are slowly expelled onto a glass slide. The material may be prepared for examination either by making a smear and staining it immediately or by treating the small piece of tissue as regular biopsy material.

Surgical biopsy is usually a simple procedure technically, especially when a mass is palpable near the surface, but it may be unsatisfactory when there is no indication of the location of the lesion in the orbit. Approaching the lesion through the upper lid should be avoided whenever possible. If such a route is indicated, precautions should be taken to avoid the levator muscle.

A note of warning should be sounded regarding the removal of biopsy tissue in cases of pseudotumor. Because of the vascular changes occurring in this lesion, the tissue tends to bleed profusely. This is a general bleeding and upon one occasion in the writer's experience it was necessary to pack the wound and do a secondary closure. If

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11. Ewing, J.: Neoplastic Diseases.

the bleeding in these or in any other cases is great, so that there is sufficient dissemination of blood throughout the orbit to provoke an increase in the exophthalmos and endanger the cornea from exposure, then the lid margins should be adhered and a very firm pressure dressing applied.

Surgical biopsies are particularly contraindicated in cases of mixed tumors of the lachrymal gland, especially when the proposed treatment is not to be carried out immediately.

Surgical Procedure

Surgical treatment of unilateral exophthalmos consists of one of three procedures. These are: (1) local excision of the lesion, (2) enucleation combined with local excision, or (3) exenteration of the orbit.

Local excision of lesion. For the successful local excision of an orbital lesion, the lesion must be well localized or encapsulated. Lesions that frequently fulfill this requirement are hemangioma, meningioma, dermoid cyst, mixed tumor of the lachrymal gland, neurinoma, lymphoma, hematoma, fibroma, lipoma, lymphangioma, and glioma of the optic nerve.

When these lesions recur after incomplete removal they usually become increasingly more diffuse and disseminated. This is particularly true of the mixed tumors of the lachrymal gland, which seem after each incomplete surgical excision to become more locally destructive, invasive, and metastogenic. They tend to recur even when so well encapsulated that a complete removal has been anticipated at the time of original excision. Sanders attributes this extremely high recurrence to the tendency of the tumor to invade the bone and to the fact that when it is removed by being "shelled out" of the capsule, tumor tissue which has invaded the capsule apparently remains behind. In these cases, therefore, the excision should be as wide as possible. If the tumor is invasive an exenteration is indicated, and if there is bone involvement the bone should be resected if possible.

Sometimes the capsules of the various lesions adhere to adjacent structures. In the case of the extra-ocular muscles this often causes injury when the lesion is removed without the globe. This is particularly true of the meningioma which lies in the apex of the muscle funnel in direct relationship to the extra-ocular muscles. When one or more of these muscles is injured in this way it may be advisable to fix the eye in the primary position, so that the repair tissue formed later in the orbit around the globe will fix it in good alignment and with no proptosis. This can be accomplished by passing a silk suture through the lid margin and through the episclera at the limbus, nasally and temporally, and tying over the surface of the lids. A tenotomy of the opposing muscle may also be advisable.

The location of a lesion in the orbit determines its accessibility for removal. It may be located in the muscle funnel, as are meningioma and glioma of the optic nerve, but the majority of lesions are outside the muscle funnel and, luckily, are located temporally so that they can be very satisfactorily approached by a transconjunctival route, in the following manner: A canthotomy is performed and the fibers of the external canthal ligament, together with the tarso-orbital fascia, are divided. The conjunctiva is incised along the fornix to the vertical meridian above and below the canthotomy. This conjunctiva is dissected free. If the tumor is in the muscle funnel, the external rectus muscle must be severed at its insertion. By retracting the globe nasally, very good access to the orbit is obtained. In our experience any lesion can be removed as satisfactorily in this manner as by the Kronlein method. If a little more exposure is needed some of the margin of the orbit temporally can be removed by rongeur forceps without causing any cosmetic blemish, but this additional procedure is rarely necessary.

The temporal transconjunctival approach gives sufficient access to the orbit for the removal of tumors located anywhere but nasally. When they occur nasally neither this approach nor the Kronlein is satisfactory because, if the muscle funnel must be crossed in approaching the lesion, there is such extensive damage to the extra-ocular muscles, the posterior ciliary vessels and nerves, and the optic nerve that it is not feasible to attempt to retain the globe. If the lesion is definitely in the nasal side of the orbit, it should be possible to use the same transconjunctival approach nasally, although I never have had occasion to do so.

In cases of tumor of the optic nerve (glioma or meningioma) it may be advisable in rare instances to excise the tumor, leaving the globe *in situ*. The transconjunctival approach can be used, the external rectus reflected, the tumor excised at the apex of the orbit, and the globe with the tumor attached everted by extreme rotation of the eye. This gives satisfactory exposure for excision of the tumor from the globe. Fortunately the tumor frequently leaves about 2 mm. of unaffected nerve adjacent to the globe, and this is sufficient to permit the excision of the nerve from the globe free of tumor tissue.

Small lesions located in the region of the lachrymal gland can be approached satisfactorily through the outer third of the skin of the upper lid. Care should be taken to avoid any injury to the levator muscle.

Enucleation with local excision. Occasionally when the orbital lesion is extensive but localized, or inaccessible for local excision leaving the globe *in situ*, it is well to enucleate and then do an excision, so that the patient may later wear an artificial eye.

Exenteration. An exenteration of the orbit is indicated in extensive involvement with any tumor, in all cases of sarcoma except lymphosarcoma, which is quite radiosensitive, in diffuse extensive recurrence of an excised tumor, in extensive orbital extension of an intra-ocular tumor, and rarely in orbital involvement secondary to a new growth of the nasopharynx, sinuses, or lids in order to facilitate irradiation or to relieve pain.

In performing the exenteration, the skin of the upper and lower lids is left intact. The skin of the upper lid is inverted upon the roof of the orbit and the skin of the lower lid is used similarly to cover the floor of the orbit. If the remainder of the orbit is allowed to granulate, discharge occurs over a long period of time and frequent dressings are required, sometimes for several months. A Thiersch graft placed in the orbit at the time of the exenteration will take readily on the bare, deperiosteomized bone and leave a clean, non-discharging, odorless orbit one week after the operation.

The Profession of Medicine.—The fact must be accepted that one cannot expect to become a skilful practitioner of medicine in the four or five years alloted to the medical curriculum. Medicine is not a trade to be learned but a profession to be entered. It is an everwidening field that requires continued study and prolonged experience in close contact with the sick.—Peabody, Francis W.: Doctor and Patient, New York, The Macmillan Company, 1939.

THE CLINICAL INTERPRETATIONS AND APPLICATIONS OF ELECTROCARDIOGRAMS

VERNE S. CAVINESS, M.D., F.A.C.P.

RALEIGH

Probably the chief value of the electrocardiogram is as an aid in determining the quality of the heart muscle. Electrocardiography has fallen into some disrepute, owing to improper interpretations and applications; however, there is too much potential value in it for it to be discarded because of errors that represent human equations rather than a defect in the procedure.

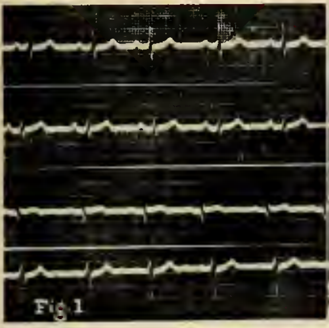
Interpretations of electrocardiograms should be made only by physicians with adequate training and experience. Failure of physicians to recognize the importance of this safeguard for their patients is resulting in a rather widespread demand for an American Board of Cardiology for the certification of those physicians who are adequately trained for such work.

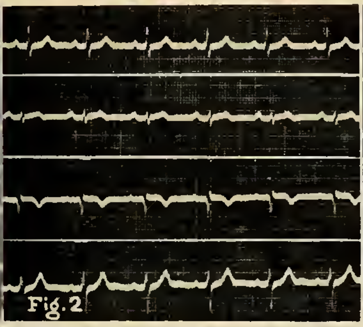
One of the dangers of electrocardiography is that erroneous interpretation of electrocardiograms may create psychoses in persons possessing approximately normal hearts. Another is that of creating a false sense of security in a patient with a damaged myocardium and possibly permitting him to undergo an elective surgical operation or to engage in too strenuous activities.

One should never attempt to read too much into an electrocardiogram. It is merely an aid to a diagnosis, and should be considered as an integral part of a composite picture. The history of the illness, the general physical examination, and the stethoscopic examination of the heart—at times supplemented by exercise tests—must be considered along with an electrocardiogram in any comprehensive heart study.

One should not forget that following an acute coronary occlusion, a number of hours may elapse before the electrocardiogram shows the effects of the accident (figs. 1 and 2). A very small infarct involving vital areas, such as the bundle of His, may cause death before any electrocardiographic evidence of the accident is obtainable.

Read before the Section on Practice of Medicine, Medical Society of the State of North Carolina, Pinehurst, May 14, 1940.





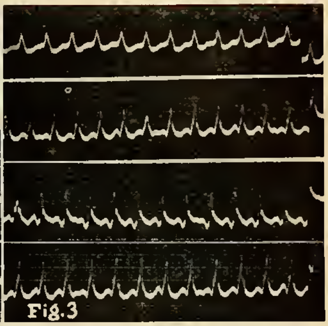


Fig. 1. This tracing was made four hours after a severe prolonged attack of precordial pain, radiating down the left arm. It shows no evidences of the acute attack, but does show evidences of the coronary occlusion that occurred two years previously.

Fig. 2. This tracing was made twenty-four hours after figure 1. It shows the effects of an acute coronary occlusion.

Fig. 3. This tracing shows auricular flutter, 1-1 ratio, in a heart with a very old chronic infarction.

Rhythm

Arrhythmia not only causes great distress and worry to the patient, but also often presents a difficult problem of diagnosis to the attending physician. Rules for differential diagnosis of arrhythmias are easily made, but unfortunately are not sufficiently reliable in clinical practice. For example, premature ventricular contractions from some insignificant cause may produce such an irregular rhythm of the heart and pulse as to be indistinguishable from auricular fibrillation without an electrocardiogram.

The sinus arrhythmia which occurs in young people has no clinical significance.

Tachycardia may be due to hyperthyroidism, to some emotional stress, or possibly to badly damaged myocardium; or it may be due to auricular flutter (fig. 3), paroxysmal auricular or ventricular tachycardia, or to a series of extrasystoles. Very often a clinical differentiation without an electrocardiogram is impossible.

Heart block, whether partial or complete, often must be distinguished from other conditions, such as auricular fibrillation or extrasystoles. Coupling of beats, bigeminal pulse, pulsus alternans, and other conditions demand careful differentiation with respect to etiology and for purposes of therapy. Here again an electrocardiogram is indispensable.

In a study of cardiac rhythm, the value of the electrocardiograph is rarely questioned. The legal dictum *res ipsa loquitur* applies here, except that there must be an accurate interpretation of the tracing. Occasionally tracings are made which require ample experience for interpretation; interpretation from a book of models is not always possible. Figure 4 is a good example of this. Here the P waves are superimposed on T waves in a tracing from a rheumatic heart showing a very long conduction time. Figure 5 is a later tracing from the same heart showing a slower heart rate and a shorter conduction time. Here the P and the T waves appear separately.

The mere existence of a cardiac irregularity need not indicate a grave prognosis, nor need it demand treatment. Auricular fibrillation may defy all treatment, yet not prevent the victim from engaging in an active occupation. Life insurance companies often issue insurance at nearly standard rates to patients with extrasystoles. Sinus arrhythmia may frighten the novice electrocardiologist; yet the patient may live to a very ripe old age.

Not so benign, however, are the tracings from digitalis poisoning. These should usually be accepted at their face value, and digitalis stopped. It is well to remember that if small doses of digitalis do not produce desired results, over-dosage is likely to make the condition worse.

Myocardium

The heart muscle is the power that keeps blood circulating through the entire vascular system. Anything which causes an impairment of function of the myocardium decreases the blood flow and lowers the efficiency of the body as a whole.

The quality of the myocardium depends on many factors. A first essential for good function is a full supply of good arterial blood flowing through coronary arteries.

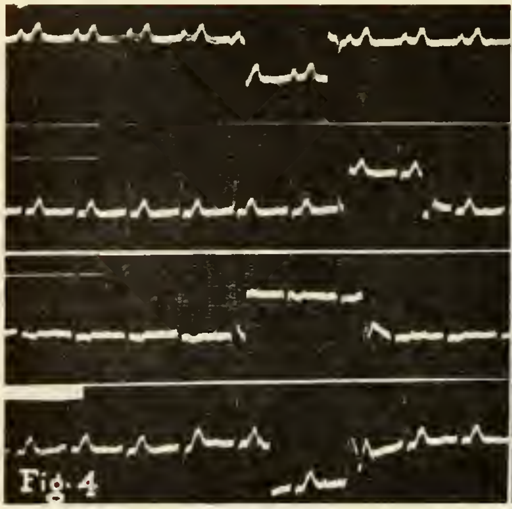


Fig. 4. This is a tracing from a case of rheumatic heart disease, without arthritis. P waves are superimposed on T waves.

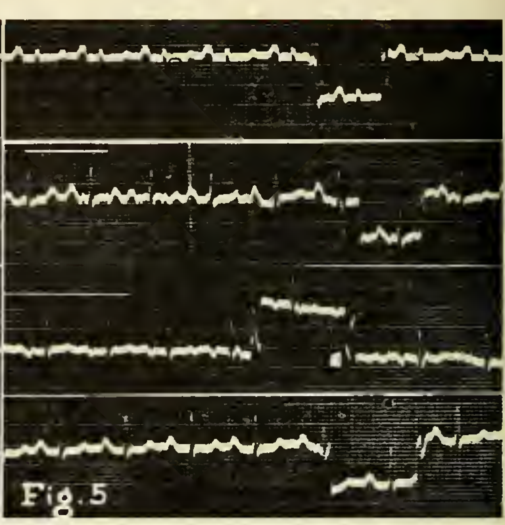


Fig. 5. This tracing shows improvement over figure 4. The rate has slowed and the conduction time is shorter.

Valves are secondary in importance, and only rarely do they seriously affect the heart efficiency. It is an aphorism that heart murmurs never kill anyone. Various infections have a predilection for heart muscle, producing severe grades of myocarditis or of myocardial degeneration. Among these may be mentioned syphilis (figs. 6 and 7), rheumatic heart disease (figs. 4 and 5), tuberculosis, scarlet fever, and diphtheria. The first two produce effects that are frequently seen in any active cardiac clinic.

Pressure on the heart, as from tympanites, pericardial effusion (figs. 8 and 9), pleural effusion, empyema, tumors, etc., also depresses the efficiency of myocardium.

The electrocardiogram furnishes the best index to the quality of the myocardium, and to the condition of the coronary arteries.

Coronary Arteries

It is rather difficult at times to distinguish between diseases of the myocardium and diseases of the coronary arteries. Some clinicians make no effort to differentiate between diseases of the two, holding the belief that, with rare exceptions, diseases affecting the muscle also affect the coronary arteries.

It appears probable that all angina pectoris, as well as the pain from occlusions, arises in the coronary arteries or in the muscle supplied by arteries occluded. Electrocardiograms show evidences of coronary artery sclerosis quite early—often before any clinical signs or symptoms appear. Electrocardiograms are reasonably accurate if associated with clinical findings in making diagnoses of coronary artery occlusion, especially when it is possible to compare tracings made on different dates (figs. 1 and 2).

For a reliable evaluation of the myocardium and coronary arteries of any heart, the age and degree of senility as evidenced by the patient's general appearance must be considered. All cardiac changes are relative and usually are in some proportion to the age. Too many clinicians disregard age, premature senility and other important factors.

Angina pectoris and coronary occlusion are the conditions most frequently encountered affecting the coronary arteries. Many cardiologists consider angina pectoris to be due to spasm of coronary arteries even if not actually due to small occlusions. It is true that at autopsy scars from minute arborization blocks are found without a reliable history to substantiate occlusion symptoms. Also, occasionally, painless occlusions occur. These may be recognized antemortem from symptoms of weakness, shortness of breath, and evidences of cardiac decompensation, and the diagnosis may be corroborated by the electrocardiogram.

Statistics of the mortality from surgical procedures which are purely elective are staggering. For many such types of opera-

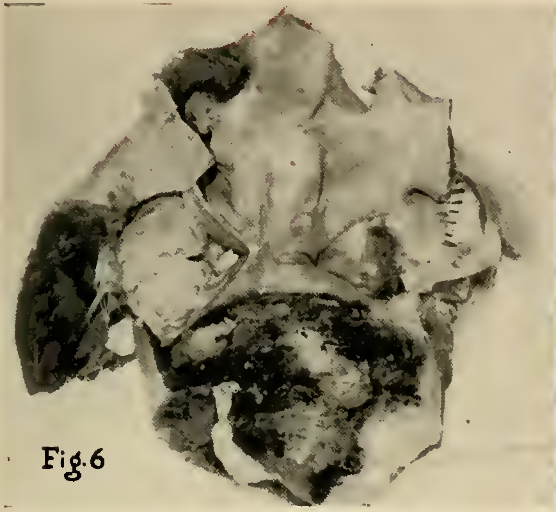


Fig. 6. This heart presents a button hole mitral valve with almost complete obstruction. It also presented an intractable auricular fibrillation. It is from an old syphilitic patient who had had insufficient treatment for syphilis.

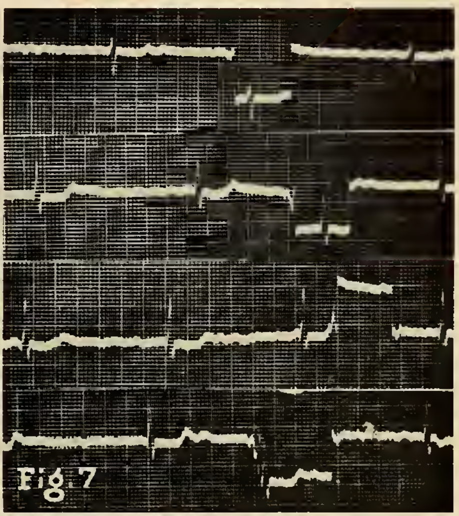


Fig. 7. This is the tracing from the heart shown in figure 6.

tions the mortality may run twenty per cent or higher. Quite a number of hospitals have reduced this inexcusable mortality to a negligible factor by the routine employment of electrocardiographic studies in patients of middle life or older. The patients agree with hospital authorities that it is better to live with an infected gall bladder or a pyosalpinx than to die from surgically produced coronary occlusion.

Drug Effects

Definite changes are produced in the heart action and in electrocardiograms by digitalis, strophanthus, and probably by nicotine in persons who are hypersensitive to its action. In the study of any heart, careful consideration of previous treatment is essential.

Notorious errors in the interpretation of electrocardiograms which have been widely publicized could have been obviated by a reasonable consideration of previous drug therapy and an intimate knowledge of characteristic electrocardiographic changes, even if a reliable history was lacking. Toxic effects of digitalis are shown in the electrocardiogram by coupling of the beats—i. e., a more or less normal complex followed by an extrasystole, and this followed by a compensatory pause. Or, it may appear as a prolongation of the auriculoventricular conduction time. Or, frequently, there may be seen characteristic changes in the R-T or S-T segments, as a concave line instead of a convex line (fig. 10).

Cardiac Psychoses

It is not surprising that many people should fear the development of cardiac disease, when the high rank of cardiac disorders as causes of death are considered. Various gastro-intestinal disorders produce symptoms that simulate the shortness of breath and precordial pain of heart disorders. Probably many have had experiences similar to one which occurred in my interne days, when I was wakened at 3 a. m. by a patient at the door of the accident ward who stated that he was dying of acute heart failure and could not wait for a trolley or taxi, but had run seventeen blocks to see a physician.

Many people have fixed delusions of imaginary heart disease; they are actually ill and disabled as though there were definite cardiac pathology present. Work of any type is impossible for them. They know it would kill them. This mental illness can be intensified by the possession of too much disability insurance. But while we pity such people, possibly they are not to be blamed. Many of them have been told by their trusted physicians (without an electrocardiogram) that they have a severe heart disease, and have been put to bed for the conventional six weeks. After a period of gradually in-

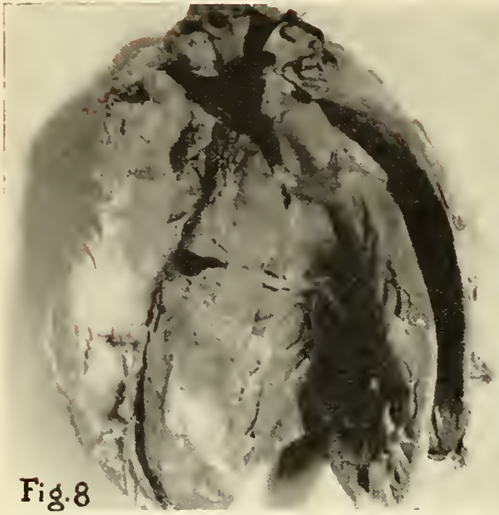


Fig.8

Fig. 8. This heart is from a patient with acute rheumatic fever, recurrent, with adhesive pericarditis. The pericardium is shown to be approximately as thick as the wall of the ventricle.

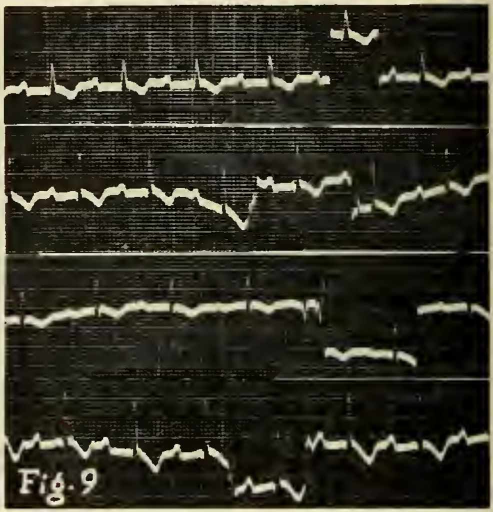


Fig.9

Fig. 9. This tracing was made from the heart shown in figure 8.

creasing exercise they go back to work, but when they resume their old habits of over eating, the pain returns. Any type of precordial distress must represent a very dangerous heart attack to such a person. Such patients can usually be cured by the following procedures.

First of all, a normal electrocardiogram is essential. This can be explained in detail to the patient, and consultants may be called in to support the views of the attending physician or cardiologist.

The digestive disorder, from whatever cause, must be relieved. This may be difficult, but it will cure a large number of these patients.

A psychiatrist may be needed for some patients.

It would be impossible to determine the damage done by one physician who formerly did a great many insurance examinations. He discovered that if he recorded some minor heart defect in his reports, the companies would request that he fill out a heart blank and pay him an additional two dollar fee. The heart blanks carried normal reports and the applicants secured their insurance, often at substandard rates. Now he makes no insurance examinations, but the applicants he examined continue to bedevil the cardiologists. They know that they have heart trouble, partly because they still have to pay extra for their life insurance.

Unless the clinical picture leaves no doubt of the diagnosis, it is unfair to the patient to put him to bed for prolonged periods of rest without definite electrocardiographic proof of coronary occlusion. Our records show the electrocardiogram of a physician who was put to bed with a diagnosis of coronary occlusion based on precordial distress. After a few days of restricted diet he felt so much better that he left the hospital and had an electrocardiogram made. There is nothing wrong with the electrocardiogram, and after ten years he is still working full time, though with fewer dietary indiscretions.

Dr. J. B. Herrick(1), before the meeting of the American College of Physicians in 1938 mentioned thirty conditions that may be confused with coronary occlusion. Very prominent in his list was cardiac neurosis. He stressed the need for electrocardiograms in making the differential diagnosis.

Conclusion

Electrocardiography is one of the most valuable aids available in the study of heart conditions; however, its value is always dependent on very careful interpretations of the tracing and a reasonable application of these findings to the other clinical and laboratory data.

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1. Herrick, J. B.: On Mistaking Other Diseases for Acute Coronary Thrombosis, Ann. Int. Med. 11:2079 (June) 1938

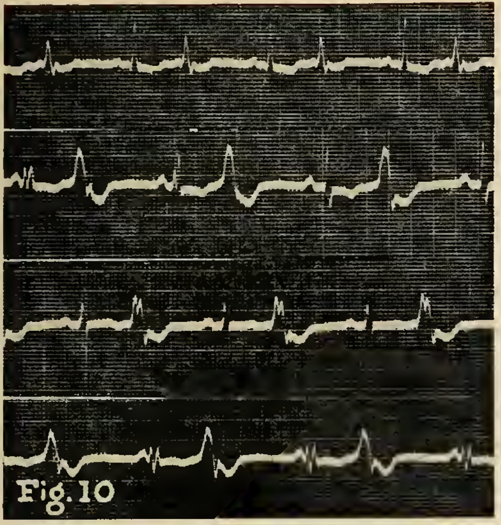

Fig. 10. This tracing shows digitalis effect in a heart that has previously suffered an occlusion.

Abstract of Discussion

Dr. T. L. Umphlet (Raleigh): The subject which Dr. Caviness has discussed is of importance not only to us, but to every branch of medicine. The electrocardiogram is of value in determining the diagnosis of the cardiac patient, and lends valuable aid in the differential diagnosis of other conditions as well. By using it along with other studies we are able in most cases to give a true picture of any patient. I feel, with Dr. Caviness, that there should be a closer relationship between electrocardiography and other branches of medicine.

In regard to the interpretation of the electrocardiogram following digitalis therapy, it is often difficult to give a true interpretation from a single tracing, because the changes following digitalis therapy so often simulate the changes found in other conditions. This difficulty can be overcome in most cases by the use of serial tracings.

Patients who have indefinite precordial pain not typical of angina pectoris present a serious problem. Cases with definite angina pectoris attacks receive treatment regardless of the electrocardiographic evidence, because we know that in at least 25 per cent of these cases the electrocardiogram will fail to show any evidence of pericardial disease. Dr. Caviness has mentioned the use of exercise tests in helping to make a diagnosis in these difficult cases. In those cases with indefinite pain the problem is not easy. In some cases the serial electrocardiogram will show progressive evidence of coronary sclerosis. Frequently the electrocardiogram will be negative or doubtful, and will remain so until the patient has a definite coronary occlusion. For this reason I do not feel that the negative evidence should preclude the possibility of coronary artery disease.

Dr. Caviness has pointed out that following acute coronary thrombosis it may be hours or even days before there are typical electrocardiographic changes. This is probably due to the fact that the changes of the electrocardiogram are not due to the thrombosis, but to the resulting myocardial damage.

THE JOINT RESPONSIBILITY FOR MATERNAL WELFARE IN THE LIGHT OF CURRENT SOCIAL TRENDS

W. Z. Bradford, M.D.

Charlotte

The outstanding contributing causes of infant and maternal mortality in North Carolina are economic and social in their origin. Poverty, ignorance and neglect constitute the background of over 75 per cent of the maternal deaths occurring in this state. Analysis of mortality rates throughout the South emphasizes the fact that in the great majority of pregnancies which proceed to a fatal termination the patients were in a grave physical condition at the time of the first medical contact. The need for organization of available facilities and for competent personnel is apparent. The complaint of the practicing physician has usually been that the case was hopeless when it reached his hands.

In a recent analysis of 515 maternal deaths from toxemia of late pregnancy in this state made by the speaker from questionnaires prepared by the Bureau of Vital Statistics of the North Carolina State Board of Health the outstanding contributing factor was found to be neglect. Only twelve of these patients received competent prenatal care and medical assistance. The majority were seen for the first time late in pregnancy either in convulsions or with advanced toxemia. Many were not visited by a physician until after death. The role of illegitimacy, which predisposes to neglect, was striking. Twenty-two per cent of the maternal deaths from toxemia occurred in women who were illegitimately pregnant. Other studies of maternal mortality from sepsis and hemorrhage likewise emphasize the fact that the social and economic handicaps confronting a large proportion of the population in our communities are also factors in death from these conditions. There is little that the practicing physician alone can do to correct this situation. It is estimated that 50 per cent of the pregnant women in North Carolina can not afford to purchase competent obstetrical care. No amount of education of the public can overcome this economic factor. Likewise no amount of postgraduate

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Read before the Section on Public Health and Education, Medical Society of the State of North Carolina, Pinehurst, May 14, 1940.

training of general practitioners and specialists in the field of obstetrics can materially reduce the mortality in those cases where toxemia, sepsis or hemorrhage is far advanced. The efficiency of medical therapy depends upon early recognition of obstetrical pathology, followed by prompt and competent treatment. While maternal welfare is a medical responsibility it is also a public health responsibility, a community responsibility and a governmental responsibility.

The increased social and medical activity of the federal government, particularly in matters pertaining to infant and maternal welfare, is the dawn of a new era. The program is one of far reaching implications and demands the thoughtful consideration of the medical profession. The disbursement of large funds through the state boards of health places our public health departments in a position of dual responsibility. Their obligations to the citizens of our commonwealth and their awareness of the crying needs of maternity and infancy necessitate an active participating program in this new social structure. Equally as important are the obligations of public health departments to the practicing physician and to the principles of democracy and individualism which have been the foundation stones of medical progress and development in this country. The active practice of medicine is distinctly not a legitimate public health activity.

To draw a sharp line of demarcation between preventive and curative medicine is an impossibility. Where one stops and the other begins cannot be definitely defined when consideration is given to the question of the prolongation and conservation of life in contradistinction to the prevention of a particular disease. This is especially true in problems of maternal and infant welfare. There is no field of medicine where public health and private practice are more interlocked and closely entwined than in obstetrics. It has been aptly demonstrated that prenatal care, unless followed by a competent delivery service—including facilities and organization for the scientific treatment of pathology complicating pregnancy, and adequate postpartum and neonatal supervision—is of limited value except as an educational measure. In the Charlotte Maternity Clinic an infant mortality rate of over 8 per cent existed during the years this clinic operated as a prenatal service only; in 1939 the uncorrected infant mortality in a series of nearly 1000 deliveries of indigent patients was 4 per cent.

Dr. I. C. Riggin in his chairman's address before the Section of Preventive Medicine and Public Health at the St. Louis meeting of the American Medical Association presented in masterful fashion the necessary interdependence of the practicing physician and the public health physician in the expanding public health program. To quote at length: "Medical conferences and clinics which are conducted by health departments should be used as a means of education and to bring to the attention of the public the value and need of medical and public health services. It has been through the demand of the citizens and physicians that tuberculosis diagnostic clinics and sanatoriums have been established and thus become recognized definitely as a public health function."

"Maternity centers have been established in many sections throughout the country, and not only have there been developments in this field which have been educational in character, but in many instances, definite medical service has been rendered to expectant mothers and infants when they were unable for various reasons to obtain medical service through other sources. This has unquestionably been a factor in reducing maternal and infant mortality rates. From an economic standpoint health supervision of the child has been demanded of health departments. This activity is not carried on alone by the official agencies but there is active participation by the medical profession."

"Changes in economic conditions in the country during the past several years have presented new perplexing problems to the medical profession. It can be stated without misstatement of facts that additional burdens have been placed on the medical profession in the care of the indigent sick. The care of the indigent sick may not be a function of the government, but it is a responsibility whether it be national, state or local. This service usually has been available only through the efforts of the practicing physician, who through his self sacrifice and humanitarian service cared for those unfortunates to his own detriment and loss."

At this time of expanding public health activity it is essential that public health and private practice advance with a united front, accepting additional opportunity for service and preserving the basic rights of individuals. If there has unfortunately been any divergence of thought and interest, a changing social order makes it inevitable that in the future the two cannot possibly remain apart. The additional function and responsibility of the health departments can only be successfully undertaken with the help of the practicing physician. The care of the indigent sick is a responsibility which he cannot carry alone, and it is not his place to carry it without just compensation for his services. Further evidence of the necessary cooperative participation and interest of the practicing physician in the changing social scheme is evidenced in the platform of the American Medical Association, which advocates among other policies the following:

Item 1: The allotment of such funds as the Congress may make available to any state for the protection of health.

Item 4: The development of a mechanism for meeting the needs of expansion of preventive medical services with local determination of needs and local control of administration.

Item 5: The extension of medical care for the indigent and the medically indigent. (Note the differentiation that many nonindigent individuals are indigent so far as the ability to purchase medical attention is concerned.)

Item 8: Extension of public health and medical services consistent with the American system of democracy.

As has been previously stated the maternal welfare problem in North Carolina can only be solved after consideration of certain facts in our economic, social, and geographical structure. A highly successful program in a metropolitan center with its concentration of population, or an effective maternal and infancy service in a midwestern state with no racial problem, might be an utter failure in the southern states. Among these local characteristics might be mentioned:

1. A low per capita wealth—among the lowest in the nation—making it difficult for many people to obtain adequate medical care and producing a large number of medically indigent obstetrical patients, estimated at 50 per cent of the annual births.

2. A widely scattered rural and agricultural population, between 80 and 85 per cent of the population residing in communities of less than 10,000 population.

3. A midwife system delivering 30 per cent of the population under limited control and with inadequate supervision, and with no systematic and organized method of removing from their care the abnormal or potentially pathological case.

4. An inadequate or completely absent public health service in many counties and inadequate medical facilities in many others.

Thirty-five thousand mothers annually give birth to babies in North Carolina with inadequate medical care. The patients of midwives form the large nucleus of this group. The medical profession would certainly endorse any measure that would bring to their hands early in pregnancy the abnormal and potentially complicated cases, leaving only the most normal obstetrical case in the midwife's hands. The results in Moore County are worthy of mention. A trained nurse midwife from the Lobenstein Clinic has developed a program of supervision and teaching of midwives, with a regulation of midwife practice by medical aid that is applicable to every county of the state. Over 1000 consecutive deliveries have occurred in this county without a single maternal death, where a few years ago the maternal mortality rate was 16 per 1,000.

Public health nurses with supplementary training as midwife supervisors offer an economical solution, and may serve as liaison between the practicing physician and the public health department in their joint efforts to solve the maternal and infancy welfare problem of North Carolina.

Abstract of Discussion

Dr. Makepeace (University of Pennsylvania): Mr. Chairman, the problems which you men face in North Carolina are, of course, quite different from those which are faced in a large city, as Dr. Bradford has brought out. We have very few midwives. Most of our patients are delivered either in large clinics, or by home delivery services run by the medical schools, or by the private physician. As Dr. Bradford said, our problems can be solved in a way which would not apply down here.

I have recently discussed with Dr. Bradford his idea of public health nurses acting as supervisors of midwives. It seems to me that this would be an excellent method of attack, which would enable you to supervise people who otherwise would have no prenatal care and no delivery care or, at the best, very inadequate care.

Dr. R. A. Ross (Durham): I think this Section should be congratulated on this most provocative paper which we just heard. Dr. Bradford's figures will bear close scrutiny, and when you analyze them I am sure you will find that they are correct in every respect. He emphasizes the point which you folks are continually making—the necessity for reaching those patients in need of medical care. The problem is to get the patients to see somebody who has their confidence. They are indifferent.

I recommend Dr. Bradford's paper to you for your careful consideration.

Dr. R. S. McGeachy (New Bern): I think that maternity and infancy care is one of the best pieces of work that we could possibly develop, but in my county I have not been able to develop any white patronage in the prenatal clinic. Although I hold separate clinics for white and colored women, no white patients have come to the clinic for prenatal care.

Dr. P. Y. Greene (Burlington): It is commonly said that the thing that causes the most maternal deaths is the fact that we don't get these patients early enough. In my experience in practice I found that if I saw a case early in pregnancy, the chances were that I would do less work in seeing her throughout the pregnancy than if I got her a few days before she was to be delivered.

I wish that doctors throughout the state would have one price for deliveries, whether they see the patients six weeks after they become pregnant or at the time they start in labor.

Every doctor should be a doctor in preventive medicine. I don't know of any field that is better than working with these mothers and with these children.

If the babies are brought back at monthly intervals you will see a number of cases of diarrhea and other diseases of childhood. We used to go so far as to send a card within the six months, reminding mothers to bring their babies for diphtheria vaccination. I would like to see general practitioners do more of that.

Although we have a large number of maternity centers in small communities, there are not enough people in those places to have a clinic, and it is largely the responsibility of the general practitioner.

Dr. E. S. Lupton (Raleigh): I would like to take this opportunity to say a few words of praise for Dr. Bradford. Dr. Bradford is the director of our maternity work in Charlotte, and I had the privilege of looking over a report of his work for 1939.

Last year in the City of Charlotte they had around 932 deliveries. Only about 23 per cent of those deliveries were done in a hospital. And out of those 932 patients, I think there were only four maternal deaths. That shows what we can do when we really go after a problem.

To get anywhere in our maternity and infancy work, we are going to have to recognize the factors in mortality that Dr. Bradford points out—that is, poverty, ignorance and neglect—and we as doctors will have to assume our share of responsibility for that neglect. If we don't do it, I think some other body may straighten us out. I hope they won't have to.

The Effect of Pregnancy on the Hemoglobin.—Pregnancy is invariably associated with some decrease in hemoglobin level. This occurs in part as a result of the physiologic increase of blood volume during the latter part of pregnancy with hydremia accounting for ten or twenty per cent dilution of the blood solids. However, the developing fetus requires its blood building pabulum and takes its apportionment of iron from the mother. In the case of a normal full term fetus, born with an average hemoglobin complement of 120 per cent (regardless of the status of its mother's iron store), this would represent a loss to the maternal supply of approximately 500 milligrams of iron, or the equivalent of one liter of blood.—Philip F. Eckman, M.D.: Indications for Use of Iron in Treatment of the Anemias, Minnesota Medicine, 23:713 (October) 1940.

ENDOMETRIOSIS

WALLACE B. BRADFORD, M. D.

CHARLOTTE

Endometriosis is a disease entity of the female pelvis which, because of our increased knowledge of its symptomatology and pathology, is now frequently recognized. However, in spite of the epochal work of Sampson(1) on this subject eighteen years ago, many practitioners lack a working knowledge of this disease. Various observers have noted its presence in from two to three per cent of the pelves exposed by laparotomy. It was first described by Rokitansky(2) in 1860.

Endometriosis may be broadly defined as the presence of endometrium outside of the uterine cavity. It may readily be subdivided into two types. The first type, internal endometriosis or adenomyosis, is an invasion of the myometrium by the endometrial elements, which may form circumscribed adenomas. These aberrent glandular structures are regulated and influenced by the hormones that control menstruation, and hence may be found in any stage of the menstrual cycle. The second and much more common type is external adenomyosis or endometriosis, which includes all the misplaced endometrium or adenomas that are situated outside of the uterine cavity or the myometrium.

The most frequent location of aberrant endometrium is in the ovary, and secondary deposits in the pelvis are often found. Other locations include the fallopian tubes, the broad ligament, round ligament, rectovaginal septum, urinary bladder, rectus muscle, umbilicus, liver, intestine, peritoneum, lung and the perineum. Beck(3) has reported a case of endometriosis simulating hernia into the canal of Nuck, and McLean(4) has noted that endometriosis should be constantly kept in mind when a tumor in the bowel wall is encountered or suspected in the female.

Read before the Section on Obstetrics and Gynecology of the Medical Society of the State of North Carolina, Pinehurst, May 15, 1940.

1. Sampson, J. A.: Perforating Hemorrhagic (Chocolate) Cysts of the Ovary, Arch. Surg. 3:245 (Sept.) 1921; Life History of Ovarian Hematomas, Am. J. Obst. and Gynec. 4:451 (Nov.) 1922.
2. Rokitansky, C.: Ueber Uterusdrusenbildung un Uterus, Zeitschr. der k. w. k. Gessellsch. de Artzte zu wein, 1860.
3. Beck, W. C.: Endometriomata on the Round Ligaments, Am. J. Surg 31:105. (Jan.) 1936.
4. McLean, N. J.: Endometriosis of the Large Bowel, Canad. M. A. J. 34:253 (Mar.) 1936.

Etiology

Henriksen(5) has summarized the theories of etiology under three heads:

1. Origin from normal endometrial tissue of the genital tract which might occur by:
    - (a) Proliferation in continuity through the walls of the uterus and tubes. (Cullen(6), 1896)
    - (b) Lymphogenous metastasis (Halban(7), 1924)
    - (c) Propagation by retrograde menstruation (Sampson(1), 1921).
2. Origin from embryonic remnants in genital tract.
    - (a) The wolffian ducts (Von Recklinhausen(8), 1895)
    - (b) The mullerian ducts (Kossman(9), 1897)
3. Metaplasia of the serosal endothelium (Iwanoff(10), 1898, Meyer(11), 1924).

Sampson(1) in 1921 established endometriosis as a frequent pathologic entity and offered his theory of etiology based upon transtubal regurgitation of menstrual blood with viable endometrial fragments—this being most common with fibroids and retroversion. The regurgitant tubal flow has been noted at laparotomies by innumerable observers. Sampson has modified his views and agrees that his concept does not explain all cases, especially umbilical endometriosis.

Novak(12), Meyer(11), and others favor the metaplasia theory, the explanation of which is based on the embryology of the genital tract. I quote Novak(12) in the following: "The mucosa of most of the genital canal, as well as the germinal epithelium of the ovary, represents varying degrees of modification of the celomic epithelium, the primitive peritoneum. The germinal epithelium of the ovary is a segment of this tissue which is relatively undifferentiated, and therefore possesses a lot of unused differentiating potentiality. It shouldn't surprise therefore that sometimes areas may differentiate beyond that normal to the ovary, giving rise most frequently to endometrium. At times the abnormal areas may be identical with that of the tube, this being a recognized variety called endosalpingiosis."

Sampson(1) now accepts this metaplasia factor in a good many cases. It is hard to explain umbilical endometriosis except by metaplasia of serosal endothelium. Endometriosis of abdominal scars has long been thought due to trauma of the endometrium and secondary deposition of fragments. Most writers agree that the etiology is not always the same. Counseller(13) has called attention to the possibility of trauma to the pelvic organs at operation as an etiologic factor in pelvic endometriosis; for it is known that endometriomas occur in laparotomy wounds following uterine operations. In his series he found that over 50 per cent of the cases had had previous surgical treatment.

Pathology

Endometriosis simulates malignancy, and although histologically benign, is often clinically malignant in its ravaging behavior when untreated. The lesions are quite variable in size and appearance, ranging from small pink or blue-black spots on the surface of the ovary to large chocolate cysts. These cysts, or endometriomas, are usually no larger than hen eggs, but occasionally are many times larger. Almost invariably they are densely adherent to surrounding structures, especially to the posterior layer of the broad ligament and the cul-de-sac. Often numerous small blue puckered areas of implants are noted on the surfaces of the uterus, the utero-sacral ligaments, and throughout the cul-de-sac or rectovaginal septum. The proliferating and invading process may go on to freeze the pelvis completely and cause intestinal obstruction. Deep seated areas of endometriosis in the perineum, which are apt to become implanted in an episiotomy wound, may simulate an imbedded foreign body. In one of our cases the penetration and fibrosis of the process so invaded the broad ligament as to cause ureteral obstruction and hydronephrosis.

Microscopic examination reveals endome-

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5. Henriksen, E.: Primary Endometriosis of the Urinary Bladder, J. A. M. A. 104:1401 (Apr. 20) 1935.
6. Cullen, T S.: Adenomyoma Uteri Diffusum Benignum, Johns Hopkins Hosp. Rep. 6:133, 1890; Adenomyoma of the Round Ligament, Bull. Johns Hopkins Hosp. 7:112, 1890.
7. Halban, J.: Metastatic Hystero-Adenosis, Wien. klin. Wchnschr. 37:1205, 1924.
8. Von Recklinhausen, F.: Die Adenomyome und Cystadenomyome der Uterus und Tubenwandung, Berlin A. Hirschwald, 1896.
9. Kossman, R.: Origin of the Glandular Inclusions in the Adenomyomas of the Uterus and the Tubes, Arch. f. Gynak, 54:359, 1897.
10. Iwanoff, N. S.: Adenofibromyoma Cysticum Sarcomatodes Carcinomatosum. Monatschr. f. Geburtsh u. Gynak. 7:295, 1898.
11. Meyer, R.: Endometriosis, Arch. Gynec. 93:252, 1920.
12. Novak, E.: Pelvic Endometriosis and its Treatment, Am. J. Surg. 33:422 (Sept.) 1936.
13. Counseller, V. S.: Endometriosis, Am. J. Obst. and Gynec. 36:877 (Nov.) 1938.

trial tissue in the lesions, and this tissue frequently shows a typical response to hormonal stimulation. The glands may be empty or full of blood and debris, and are usually surrounded with stroma and round cell infiltration. The great pressure within endometrial cysts which is built up by menstrual activity month after month may eventually destroy the endometrial elements, which are replaced by connective tissue. Novak feels that the term "chocolate cyst" is very poor, and that they should be called endometrial cysts because of the fact that follicular and corpus luteum hematomas and ovarian cystadenomas often have chocolate colored contents. In the stroma and fibrous areas about the ectopic endometrial glands phagocytes filled with hemosiderin are frequently observed. Extensive fibrosis, adhesions and scar tissue formation are the rule, and perforation repeatedly occurring stimulates the development of new adhesions. The adhesions in the cul-de-sac and rectovaginal septum are often well nigh inseparable.

The disease occurs in both ovaries in about 30 per cent of the cases, and the pathology and symptomatology vary with the location and extent of the process. Frankel and Schenck(14) of Brooklyn, N. Y., have advanced an interesting but not conclusive hypothesis that all ectopic pregnancies, tubal or otherwise, occur because of nidation of the fertilized ovum in a locus of ectopic endometrial tissue to which the ovum is chemotactically attracted.

Diagnosis

The diagnosis is based on the history, symptomatology and findings. The disease is usually one of reproductive life, and Keene and Kimbrough(15) found 75 per cent of their patients to be between thirty and fifty years of age. A great difficulty in the preoperative diagnosis of endometriosis is the frequency of coexisting pelvic pathology such as fibromyomata, endocervicitis, salpingitis and ovarian lesions. The differential diagnosis must consider all pelvic lesions associated with bleeding and pain. A detailed history is most important for clinical diagnosis. A history of acquired dysmenorrhea and intermittant abdominal or pelvic pain which is worse premenstrually suggests endometriosis. Back pain is usually low, probably from swelling of the uterosacral ligaments; pain in the rectum and bladder and painful defecation with menses is often associated, and dyspareunia of the acquired type is frequently present. A history of sterility is probably obtained in half the cases, and menorrhagia or metrorrhagia or both are usually present. The symptoms are like chronic pelvic inflammatory disease, and their monthly periodicity is most important.

The findings likewise simulate chronic adnexal disease, and the pelvic organs may be firmly adherent on one or both sides. Nodular masses like buckshot which are exquisitely tender may be palpable in the uterosacral ligaments, cul-de-sac or rectovaginal septum. These nodules may at times be seen as bluish bulges under the vaginal mucosa in the fornix or rectovaginal septum. This clue may be absent, but when present, it is almost pathognomonic. The uterus is often in adherent retroversion, and the uterosacral ligaments are often tense, tender and firmly fixed. The white cell count and sedimentation rate, which are usually normal, may be of help in differentiating from pelvic inflammatory disease. Endometrial lesions have been wrongly diagnosed as carcinoma, and have, in fact, undergone carcinomatous change; however, this is a rarity. Occasionally patients with very large endometriomata will be found free of symptoms altogether. Often, however, because of pelvic adhesions the pain produced by examination is out of all proportion to the extent of growth felt, and in the absence of a history of pelvic inflammatory disease, a cystic tumor of the ovary that is very painful should lead one to suspect an endometrial cyst. One should remember that the physical findings may be so meager that the diagnosis must depend on intelligent and accurate history taking.

Endometriosis may cause pelvic pain and dysmenorrhea in young females, although the lesions may not be large and firm enough to palpate. Severe dysmenorrhea is probably due in many instances to adenomyosis.

Endometriosis of the bladder can be confused with carcinoma. However, the hematuria, dysuria, and pain are usually cyclical in character, and cystoscopic finding of the blue black cysts confirms the diagnosis. Tubal

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14. Frankel, J. M. and Schenck, S. B.: Endometrial Theory of Ectopic Pregnancy, Am. J. Obst. and Gynec. 33:393, (Mar.) 1937.
15. Keene, F. E. and Kimbrough, R. A.: Endometriosis In Curtis: Obstetrics and Gynecology, Philadelphia, W. B. Saunders Co., 1939. p. 388; Endometriosis, J. A. M. A. 95:1164 (Oct. 18) 1930.

endometriosis has often been wrongly diagnosed as ectopic pregnancy.

Treatment

When the endocrinal influence is removed by menopause or other means the activity in this tissue ceases and retrogression occurs, because its growth and development depend on ovarian secretions. However, ovarian ablation is not indicated in all cases, for endometriosis is a disease of childbearing women, and conservatism is desired. Each case must be individualized in regard to treatment. Efforts should be made to save enough ovary to maintain fertility.

Small symptomless lesions noted at laparotomy for other pathology may frequently be snipped off without damage to any important organ. Obstructive symptoms necessitate resection, but it is rarely necessary to resect the bowel. A diagnosis of endometriosis justifies thorough removal of the affected tissue.

A young woman with unilateral ovarian involvement should have only one ovary removed; if there is recurrence she may have borne children in the meantime, and a more radical procedure after this is not so great a tragedy. I agree with Novak(12) that the surgeon should be influenced by the marital and social status of his patient as much as by the pathology. Counseller recommends presacral sympathectomy as an adjunct to conservative therapy in the young patient with marked dysmenorrhea. The preservation of the reproductive function should not be over emphasized, however; for about 50 per cent of married patients with this disease have been non-fertile. In older women nearing the menopause the same pathology would call for hysterectomy and bilateral oophorectomy. When there is extensive bilateral ovarian involvement and many implants, complete ovarian ablation is necessary and curative. Occasionally it is physically impossible to remove all ovarian tissue, so that the patient may not have menopausal symptoms after bilateral oophorectomy, and the process may continue. Castration dosage of x-ray will control nearly all of such cases.

The therapeutic value of irradiation depends on complete ovarian destruction, and this is too radical in many cases. The presence of numerous adhesions also may contraindicate x-ray therapy. Irradiation therapy, however, is most valuable in the presence of widespread pathology when the ovarian tissue cannot be totally removed, in poor operative risks, and in nearly all recurrences. Surgery is best, in the third and fourth decades, because one cannot determine clinically the necessity of complete ovarian ablation, and because pelvic pathology is frequently coexistent.

Case Reports

Case 1. Y. P., a twenty-six year old white woman who had had a spontaneous delivery with an episiotomy in 1932, complained of mild leukorrhea and a "stitch" at the vaginal introitus. She had a slightly tender and sensitive scar in the old episiotomy wound which swelled after her periods, but did not discharge.

Pelvic examination revealed a small, tender, bluish scarred area in the region of the previous episiotomy scar in the perineum, which we thought possibly was due to the presence of a foreign body. The cervix presented a stellate laceration.

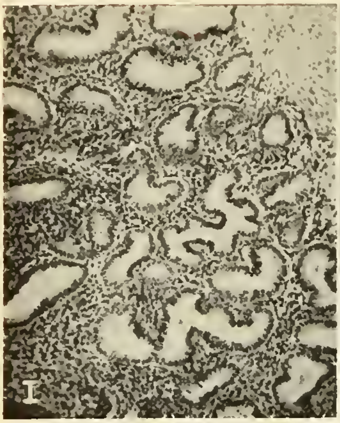
An operation was performed in June, 1936. The cervix was dilated and a bilateral trachelorrhaphy and small posterior colporrhaphy were performed, with excision of the above mentioned area. On section, no foreign body was found, but a small drop of chocolate colored blood extruded, which was found to be an endometrial transplant.

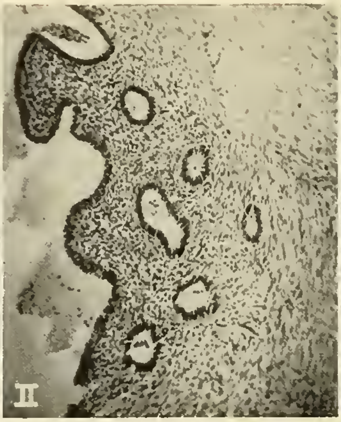
Pathologic examination revealed typical endometrial glands, some surrounded by a little stroma. The stroma contained areas of hemorrhage, and the glands in a few areas contained hemorrhagic exudate.

Postoperative diagnosis: Endometriosis of the perineum. The patient made an uneventful convalescence.

Case 2. M. L. McK., a twenty-six year old white nullipara, complained of dysmenorrhea, which had increased in severity for the past three years. For the past two years it had been necessary for the patient to miss three days from work each month. She had not been relieved by syntropan and antuitrin, and recently narcotics had been necessary. The periods were regular and free. The patient was subject to a lower right sacral backache.

Pelvic examination revealed a nulliparous outlet and a clean cervix. There was rather marked descensus of the uterus and irregularities on the uterine surface, suggestive of myoma. However, on the basis of the symptomatology a preoperative diagnosis of en-





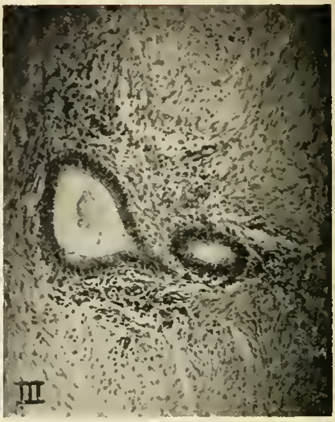


Fig. 1. Normal secretory endometrium.
Fig. 2. Ovarian endometriosis (Case 2).

Fig. 3. Abdominal wall endometriosis (Case 5).

dometriosis was made. An operation was performed after two months of conservative therapy.

On June 21, 1937, a bilateral salpingo-oophorectomy, an appendectomy and a modified Coffey suspension of the uterus were performed. Both ovaries were found to have been destroyed by densely adherrent endometriomata the size of lemons.

Pathologic examination of the ovarian tissue revealed bilateral ovarian endometriosis.

The patient made an uneventful postoperative recovery and was discharged from the hospital on the thirteenth day.

This patient has been carefully followed since operation. She has been able to return to work and has remained free of all symptoms except nervousness and occasional hot flashes, which were completely controlled by 5,000 I. U. of estrogenic hormone weekly. Since her ovarian ablation she has had two painless and apparently normal menstrual periods within a year. These, we felt, were due to the estrin administration.

Pelvic examination reveals a freely movable, small uterus, with no abnormalities palpable in either adnexal region.

Case 3. W. J. S., aged 32, a white woman, Para II, was examined for severe pain in the lower abdomen and right loin, accompanied by fever, chills and vomiting. She had been subject to intermittent attacks of lower abdominal pain for several years, frequently associated with her menstrual periods and necessitating several days' bed rest. She was previously supposed to have had a prolapsed right kidney. Her last pregnancy was nine years ago. Her periods had been regular and accompanied by dysmenorrhea which had increased in severity for the past several years.

At the time this patient was first seen she was acutely ill and toxemic, with a temperature of 101°, and a pulse of 120, and she was somewhat dehydrated. Her abdomen was rigid and tender in the right lower quadrant.

Pelvic examination was unsatisfactory due to the extreme rigidity and tenderness. The white cell count was 18,000. This patient was seen in consultation, and it was felt that peritonitis was definite and that the etiology might be appendiceal. A diagnostic laparotomy was performed on May 17, 1937. About 1,000 cc. of serosanguineous fluid was drained out of the peritoneal cavity. Bilateral fixed adherent ovarian masses the size of small oranges were found. An acute exudate covered all organs. Periappendicitis was present. A diagnosis of bilateral endometriomata and peritonitis was made, and the abdomen was closed because the patient's condition did not justify extensive surgery at that time. She made an uneventful convalescence and was discharged on the twelfth day.

Subsequent examinations of the patient revealed a right adnexal mass, about three times the normal size, which was tender and markedly fixed and did not respond to therapy. Menstrual periods continued very painful, with residual soreness in the right side between periods. In August, 1937, the patient was referred to Drs. McKay and McKay for urological examination.

A pyelogram revealed a right hydroureter and hydronephrosis from a narrowing in the broad ligaments at the site of the pelvic mass. Surgery was advised, and a second operation with a ureteral catheter in place was performed on August 23, 1937.

At this time large, densely adherent, bilateral endometriomata were found, and the endometriosis was found to extend in between the layers of the right broad ligament around the area through which the ureteral catheter had been passed. There were many transplants between the sigmoid and the posterior uterine wall which were dense and friable.

A bilateral salpingo-oophorectomy was performed.

The patient made an uneventful convalescence and was discharged on the tenth day. Examination six months after operation revealed no abdominal masses, and cystoscopic drainage of the right kidney revealed only one-half ounce of residual urine. All symptoms had disappeared except mild menopausal nervousness, which was controlled by sedatives and occasional hormone injections. Two and a half years after operation the patient remains free of symptoms.

Case 4. J. B. S., aged forty-seven, a white nullipara, was examined for profuse vaginal bleeding of four days' duration. The menses had been very heavy for several years, recently occurring every three weeks and lasting one week. No dysmenorrhea was associated. The patient had had poliomyelitis fifteen years ago.

Examination revealed a blood pressure of 200/104 and a marked secondary anemia. A hard, sensitive pelvic tumor was palpable to the umbilicus. A small umbilical hernia was also present.

Pelvic examination revealed a firm, tender uterine tumor, which was irregular in outline. There was definite parametrial induration on the right side. The patient was given a transfusion preoperatively.

Preoperative diagnosis: Fibromyoma uteri, umbilical hernia, hypertension, and secondary anemia.

On April 7, 1937, a supravaginal hysterectomy and bilateral salpingo-oophorectomy were performed, with repair of the hernia after umbilectomy. A multinodular fibroid uterus with adhesions to the right ovary and tube was found. The right ovary was the site of extensive endometriosis, and a large tarry cyst was opened in extraction from the cul-de-sac. Numerous endometrial transplants were noted on the bladder flap. An endometrioma the size of a lemon deep in the cul-de-sac was left *in situ*. The left adnexa were negative.

The patient made an uneventful convalescence and was discharged on the fifteenth postoperative day. Follow-up examination six months later revealed a clean, pliable pelvis with no evidence of the endometrial cyst that was left deep in the cul-de-sac. Apparently it had been completely absorbed after the ovarian ablation.

Case 5. A twenty-four year old white nullipara, who had had a tumor removed from her womb and a uterine suspension in 1935, complained of soreness in the abdominal scar which was worse during menstrual period and for a few days afterward. This had been present since her previous operation, and was progressively getting worse. Recently the pain had been very severe. Periods were regular, but accompanied by dysmenorrhea of the acquired type, especially on the right side.

Abdominal examination revealed a healed midline scar, in the middle of which a hard mass was palpable and exquisitely tender to touch. There was no evidence of inflammation.

Pelvic examination revealed an acutely anteflexed and fixed uterus, with a hard tender indurated area connected with the posterior wall. The left ovary seemed enlarged.

Preoperative diagnosis: Endometriosis of the abdominal wall.

An operation was performed on September 19, 1938, and an endometriosis mass in the abdominal wall was excised and bilateral salpingo-oophorectomy was done. The densely adherent wall mass was about the size of a man's thumb and was lying between the fascia and peritoneum directly beneath the previous scar. The uterus was found to have been suspended. Both ovaries were densely adherent and were the sites of endometriosis, the endometrioma on the right being the size of a lemon, and on the left the size of an orange.

Postoperative diagnosis: Bilateral ovarian endometriomata and endometriosis of the abdominal wall. Miscroscopic examination of the tissue removed at operation confirmed these diagnoses.

The patient made an uneventful convalescence and was discharged from the hospital on the twelfth postoperative day. Follow-up examinations have found her completely relieved of all her distressing symptoms, and she is back at work.

Summary

Several cases of endometriosis are presented to emphasize again the varied pathology and symptomatology of the disease. These cases include perineal endometriosis following episiotomy, abdominal wall endometriosis after laparotomy, extensive pelvic endometriosis, and ureteral obstruction resulting from endometriosis. The physical findings, because of frequent coexisting pelvic pathology, are inconstant and often inconclusive as to diagnosis. The monthly periodicity of the symptoms and the acquired increasing type of dysmenorrhea are the most characteristic observations.

More care should be exercised at operations upon the uterus to prevent transplantations of endometrial fragments onto raw surfaces. Likewise the vagina and perineum should be protected as much as possible in the performance of curettage.

Conservative treatment is indicated in the young patient whenever possible in an effort to preserve the childbearing function. However, these cases bring out the fact that the pathology is frequently so widespread, even in the very young woman, that extensive pelvic surgery is necessary.

Abstract of Discussion

Dr. Ivan Proctor (Raleigh): Fifty to seventy-five per cent of patients with endometriosis are sterile, either acquired or absolute sterility. What produces this sterility? How much do these patients differ from the normal woman? Do they differ chemically or structurally? If they differ, does it prevent any implantation of the impregnated ovum, or does it encourage transplantation of the endometrium to some other organ? If it is transplanted to the ovary, what is the function of the ovary? Does it destroy the fertility of the immature or mature ovum?

We have always practiced tubal insufflation at the end of the post-menstrual phase of the cycle when the uterus and tubes are quiescent, for then we are more likely to get the true effect of patency.

A possible factor in regurgitation is the common practice of cauterizing the cervix. When the cervix is cauterized, stenosis of the cervix sometimes results. When this occurs, it is very easy for the obstruction from below to cause uterine contraction and to deposit the endometrium in the peritoneal cavity.

I want to emphasize the value of tube insufflation in the post-menstrual phase of the cycle, and the necessity for observation of the patient following cauterization to eliminate cervical stenosis.

Weariness without cause indicates disease.—Hippocrates.

THE BLOOD BANK

R. B. Davis, M.D., M.M.S., F.A.C.S.

Greensboro

Four or five years ago I visited the Massachusetts General Hospital in Boston, which is, as you already know, one of the oldest and largest hospitals in the world. They had just opened, a few weeks prior to my visit, a blood bank. With a small group of doctors, I was shown this blood bank outfit and had its operation explained to me in detail. The attendants were all apparently experts at the job they were trying to do. I recognized a great advance in serology, but the multiple details and amount of expenditure seemed immediately to place a barrier between this innovation and our small Southern hospital.

Last year while attending the annual meeting of the American College of Surgeons in New York, I was privileged to visit a special session set aside for the sole purpose of discussing blood banking. There were present laboratory experts from the Massachusetts General Hospital, the Philadelphia General Hospital and a number of the large New York hospitals. These people discussed the problem from every angle. The more they discussed it, the more discouraging it seemed to the representatives of small hospitals who were there.

However, largely through the efforts of our efficient Superintendent, Mrs. Mary Sanford, and with the advice of Dr. John Elliott, Director of laboratories at the Rowan and Cabarrus County Hospitals, the idea of blood banking was brought before the Board of the Piedmont Memorial Hospital in Greensboro. Immediately the barrier of expense and detail arose. However, after several meetings and considerable discussion, we finally decided to give the blood bank a trial.

The first and most expensive item, as far as we had been able to learn, was refrigeration. By taking stock of the cubic feet of all the refrigerators we had in the hospital, we found that it would be possible for us to set aside a part of one refrigerator sufficient to store four pints of each type of blood. This was a big hurdle to jump without any added cost.

The next item of expense was a centrifuge to precipitate the cells of the blood when it

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became a certain age and preserve the plasma. We were not able to use the centrifuge then in the laboratory. We learned, however, that even a centrifuge is not prohibitive in cost, and by making an expenditure of $179.95, we secured one of satisfactory size with four cups.

The next item was that of vacuum bottles and valves. The vacuum bottles were 85 cents each, and we secured two dozen for plasma and four dozen for whole blood. The valves were $12.50 each and we secured three of those, which have amply taken care of our needs. The other items of expense, such as tubings, needles, saline, etc., were not considered as extra items for the blood bank, because these things were necessary with the old method of transfusion.

Another item of expense was that of technical help. However, we were assured by Dr. Elliott that any well trained technician who was accustomed to doing intravenous puncture could take the blood with perfect safety and that we could teach the operating room supervisor and the superintendent the technique.

On September 7, 1939, we opened our blood bank. We gave publicity to it in the paper, and announced that the service of the blood bank was available to all hospitals and physicians in the community, the charge being $5.00 and 500 cc. of blood for deposit. Up to the present time, we have given one hundred and ten transfusions of whole blood and twenty-five of blood plasma for the following diseases and conditions:

> (1) Pneumonia, (2) streptococcic and staphylococcic sore throat, (3) perinephritic abscess, (4) acute genito-urinary infection, (5) fibroid uterus with hemorrhage, (6) acute postpartum hemorrhage, (7) gun shot wound of chest, (8) streptococcic blood stream infection, (9) incomplete abortion, (10) ruptured gastric ulcer, (11) mastoiditis, (12) fractured leg with hemorrhage, (13) pyelitis, (14) abscess of abdominal wall, (15) secondary anemia, (16) postpartum anemia, (17) ruptured peptic ulcer with hemorrhage, (18) Malta fever, (19) pernicious anemia, (20) hemorrhage following cesarean section, (21) fractured femur with septicemia, (22) tuberculosis, (23) cancer of the sigmoid, (24) secondary anemia incident to pregnancy, (25) carbon monoxide poisoning (26) menorrhagia, (27) rheumatic fever, (28) functional vaginal bleeding, (29) empyema of the pleura, (30) empyema of the gall bladder, (31) postoperative hemorrhage, (32) chronic endometritis, (33) pelvic inflammatory disease, (34) ruptured hemorrhagic cyst of left ovary.

The average time required for a transfusion is about thirty minutes from the time the doctor walks into the hospital until the patient has received the blood. Of course, cross matching of the bank blood with the patient's blood must precede the transfusion, but the long wait for the donor and the numerous other necessary details are all dispensed with.

Every hospital is, of course, vitally concerned about the number and type of reactions they get from transfusions. Laboratory technicians and directors have assumed 95 per cent of the responsibility for these reactions, which are primarily due to giving mismatched blood.

Some of the members of our staff felt that there was a chance for contamination or confusion in a blood bank program. They said that labels might come off the bottles, or that blood might spoil or deteriorate microscopically and chemically before it did macroscopically, and that a serious reaction might take place. Others said that there was danger of giving blood from a syphilitic donor; however, since blood is always on hand in the bank to give the patient, there is time to obtain a report on each donor's blood. The fears of reactions have not materialized; for, with the 135 transfusions of whole blood and plasma that we have given, there have occurred only two reactions and neither of these was serious. As far as I am familiar with other smaller hositals, this has been practically their experience. However, reports in the literature from the larger hospitals bear out the belief that blood banking is a highly technical procedure, and that dangerous reactions will occur unless experts in this field and expensive equipment are employed.

In our hospital, the blood bank has been so satisfactory and of such convenience that we feel that the other small hospitals, in knowing of our success, might adopt this method. I would like to encourage all small hospitals to consider, and if possible to employ this method of giving blood transfusions. When the blood becomes too old—in five to seven days—it can be converted into plasma, and this can be kept almost indefinitely. As Dr. Elliott(1) has shown, blood plasma is almost as useful as whole blood. It does not have to be matched, but can be given immediately with perfect safety to any patient.

In conclusion, let me state that a blood bank is no mystery. The cost is not prohibitive. Any laboratory technician who is worthy of the name can be trained and put in full charge of the blood bank with perfect safety to the patient. Reactions are not as much of a bugaboo in the small hospitals as the literature would lead you to believe they are in the large hospitals. Every hospital, regardless of the size, should consider a blood bank. Not only are they a great asset to the professional side of a hospital, but they bear a very nice profit.

1. Elliott, John; Tatum, Walter L.; and Nesset, N.: The Use of Plasma as a Substitute for Whole Blood, North Carolina Med. J. 1:283 (June) 1940.

Bleeding a Cause of Hemoglobin Deficiency.—To lose hemoglobin through blood loss is to lose iron. By simple calculation one can assume, theoretically at least, that a normal individual, having lost one-half of the blood in the body through acute hemorrhage, may restore the blood level to normal without receiving any iron from extraneous sources. This would be accomplished, of course, at the expense of the entire iron reserve; and the replenishment of the same would become the immediate physiological problem. More insidious depletion ensues as a result of chronic and recurring blood loss. The anemia-producing effect of daily bleeding from hemorrhoids and from gastro-intestinal malignancies is generally known. The commonest instance, however, is menstrual bleeding with its almost universal depression of hemoglobin values during this period of life. Minot states that the iron requirement in women during their menstrual life is four times that of men. It seems entirely consistent, therefore, that the severe tyes of hemoglobin deficiency, chlorosis and so-called idiopathic hypochromic anemia, occur almost exclusively in females.—Philip F. Eckman, M.D.: Indications for Use of Iron in Treatment of the Anemias, Minnesota Medicine, 23: 713 (October) 1940.

Iron in the Human Body.—Although minute traces of iron are known to be present in all tissue cells, the bulk of this element is contained in the circulating hemoglobin. It has been estimated that the normal adult human body contains an approximate total of four and one-half or five grams of functioning iron. Of this total, approximately ten per cent is tissue cell iron and sixty per cent is combined in hemoglobin. The remaining thirty per cent, about one and one-half gram in amount, is stored in available depots as the liver, marrow, spleen, to be used in the production of new hemoglobin as need arises. This then represents the so-called normal iron reserve.—Philip F. Eckman, M.D.: Indications for Use of Iron in Treatment of the Anemias, Minnesota Medicine, 23:712 (October) 1940.

THE NEW CONCEPTION OF ESSENTIAL HYPERTENSION

FRANK B. MARSH, M.D.

SALISBURY

Primary or essential hypertension is that type of hyperpiesia which has associated with it, at its inception, an increased arteriolar constriction, and later, degenerative changes in the vessels, for which there is no demonstrable cause. This definition obviously eliminates those cases of cardiovascular disease due to nephritis, hyperthyroidism, arteriosclerosis, or syphilis, although these conditions may be associated with the hypertensive state.

Essential hypertension may be benign or malignant, the distinction being based upon the speed of the development and the extent of the associated vascular, nephritic, ocular, and cardiac changes.

While essential hypertension has been recognized for many years and is known to occur in no small percentage of persons making up the average physician's practice, the mystery of its cause and mechanism of development remains unsolved. In fact, up until just a few years ago, it must be confessed, very little had been learned which could be considered a reasonable explanation for the increased vascular tension. In the attempt to arrive at a satisfactory theory as to the etiology of the disease, such factors as nervous or emotional disturbances, heredity, endocrine disorders, improper diet, and many other possible causes have had their proponents and supporters. The increase in blood pressure has been explained upon the basis of a reflex spasm of the peripheral arterioles.

There is no doubt that hypertension is due in certain instances to the psychoneurotic state(1), but the number of these cases constitutes only a small percentage of the total. Peet(2) believes that hypertension results from renal ischemia produced by vasoconstriction, which, in turn, is the result of a hyper-irritability of the sympathetic nervous system, hereditary in origin.

While it is held by some that the arteriolosclerosis associated with essential hyperten-

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1. Waggoner, Raymond W.: Clinic "Anxiety Neurosis", University of Michigan Hospital, March 26, 1940.

2. Peet, Max M.: The Surgical Treatment of Hypertension, Internat. de chir., Vol. VI, No. 1 (Jan.-Feb.) 1940.

sion is due to the elevated blood pressure itself(3), there remains considerable doubt on that point. Up to this time, also, the cause of the arteriolar constriction which produces the hypertension has not been explained to the complete satisfaction of all those interested in the subject.

In 1934 Goldblatt and his co-workers began publishing the results of their very interesting experimental work regarding the etiology of hypertension. They have been able, by partially obstructing with a clamp the blood supply of one kidney, to produce a hypertension in dogs which was comparable to benign hypertension in man(4, 5, 6). There was produced the elevation of the blood pressure without any abnormal urinary manifestations or any increased retention of nitrogenous material in the blood. There resulted, in the course of time, vascular changes in the blood vessels everywhere, except in the ischemic kidney and the eyes, these changes being characterized by some thickening of the media. The subsequent removal of the kidney thus treated brought about the restoration of the normal blood pressure in the animal.

When clamps were placed on the arteries supplying both kidneys, so that all kidney structure was made ischemic rather rapidly, there was developed a condition comparable to malignant hypertension seen in man. In this instance the albuminuria, hematuria, cylindruria, etc., made their appearance. There were also the retinal changes, the increased nitrogen retention in the blood and the subsequent death of the animal as a result of the uremia. The arterioles in many organs as well as in the kidneys of these animals showed a wide-spread fulminating arteriolar necrosis and necrotizing arteriolitis not distinguishable from that seen in man after death resulting from the malignant form of hypertension.

The question arose then as to the mechanism through which the hypertension was produced. Was it due to an internal secretion produced in the ischemic kidney which could raise the blood pressure in an effort to overcome the decreased blood supply to the organ? Was it the result of a nerve reflex which was initiated in the course of the experiment? Or, was it the result of retained urinary poisons which the ischemic kidney was failing to eliminate as it would under normal circumstances? It was easy to eliminate the last one of the possibilities, for when both kidneys were removed the blood pressure of the dog did not rise.

In order to disprove the possibility of the hypertension's being the result of any nervous reflex, the kidney or kidneys were completely denervated and the experiments repeated. As in the first experiments the animals with the denervated kidneys developed hypertension.

The work up to this point seemed to indicate pretty conclusively that there was produced in the kidneys thus made ischemic, a substance of pressor character which caused the hypertension.

In order to substantiate this theory several other experiments were done. After the renal artery was partially obstructed and the renal vein was tied off, no hypertension resulted. The theoretical secretion was thus prevented from gaining entrance into the systemic circulation.

When the kidney was made ischemic and the ureter of the same side was ligated, the hypertension failed to occur, as the kidney substance was soon destroyed by the pressure of the retained urine. It is interesting, too, to note that after the removal of the suprarenals, no hypertension resulted when the ischemia of the kidneys was produced. This fact indicates that it is through the suprarenal glands that the pressor substances function.

On the basis of these experiments Goldblatt and his co-workers have concluded that in those persons who develop essential hypertension there exists some mechanism which brings about a retarded flow of blood through the kidney vessels. The ischemia thus produced results in the generation of a humoral substance which brings about a generalized peripheral arteriolar constriction with the rise of the blood pressure. As a result of the rise of blood pressure and the development of azotemia the degenerative vascular changes are brought about.

Taquini(7) concludes from his experimental work on dogs: (1) That the arterial pressure rises after the reestablishment of the circulation to a previously totally ischemic kidney; (2) that the rise in the blood pres-

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3. Reference taken from the Harvey Lectures, 1937-38, by Dr H. Goldblatt.
4. Goldblatt, H.: Studies on Experimental Hypertension, Ann. Int. Med. 11:69, 1937.
5. Goldblatt, H.: Experimental Hypertension Induced by Renal Ischemia, The Harvey Lectures, 1937-38, p. 237.
6. Goldblatt, H.: Studies on Experimental Hypertension, XII, Am. J. Clin. Path. 10:40, (Jan.) 1940.
7. Taquini, Alberto C.: The Production of a Pressor Substance by the Totally Ischemic Kidney, Am. Heart J., Vol. 19, No. 5, (May) 1940.

sure is the result of a pressor substance formed in the kidney during the period of total ischemia; (3) that the hypertension produced is the result of the pressor substance acting directly upon the peripheral vessels, producing a marked vasoconstriction.

It is difficult, of course, to transfer all of these established facts to the human being. However, a very significant fact is that in a large number of autopsies done on persons dying of hypertension, there was found in 86 per cent of the cases some evidence of reduced vascular supply to the kidney; or, in other words, a condition was found which was capable of producing some degree of ischemia of the kidney(8).

The two cases reported by Dicker(9) throw considerable light on the question of the etiology of hypertension. The first was that of a female, aged thirty, who because of an intoxication of unknown character developed anuria with marked nonprotein nitrogen retention, but without elevation of blood pressure. The investigation of the peripheral vessels of the patient revealed that they were reacting normally. The second was that of a female, aged twenty-eight, who, following scarlet fever, developed a marked hypertension without there being any increase in the nonprotein nitrogen or other evidence of renal insufficiency. There was found on investigation a marked degree of vasoconstriction of the peripheral and presumably the renal vessels. He concluded that the impairment or cessation of renal excretory function is not the cause of hypertension in kidney disease, but that vasoconstriction of the renal vessels, even in the absence of azotemia, is sufficient to cause and maintain the elevation of the blood pressure.

Another group of diseases which have a bearing on hypertension has recently been called to the attention of the profession. This is the group of kidney diseases which have associated with them a hypertensive state. Williams and Harrison(10), discussing the clinical pictures of 100 patients with increased blood pressure, stated that they found that 30 of those patients had evidence pointing to some type of kidney disease, either at the time of the examination or in the past. Of this number 8 had urinary tract obstruction, 8 gave a history of stone, colic, or hematuria, 5 gave a typical history of pyelitis, 8 presented a "masked pyelonephritis", and one had coarctation of the aorta. These observations regarding the occurrence of renal disorders in patients with essential hypertension are in accord with the conclusions of Schroeder and Steele(11), who found that a large percentage of patients afflicted with hypertension had abnormal pyelograms.

Several cases of unilateral kidney disease occurring in children(12, 13) and adults(14, 15) and associated with hypertension have been reported, in which the elevated pressure has been restored to normal following the removal of the diseased kidney.

Just what the mechanism of the hypertension is in these cases one can not say with any degree of certainty, but it is quite possible that these pathological processes might bring about, or in some way be associated with, a decrease in the blood supply to the kidney(16). Such an occurrence could be explained by the Goldblatt theory of renal ischemia.

Bearing in mind the percentage of the hypertensive group who at autopsy manifested an organic lesion capable of producing some degree of ischemia of the kidney, and comparing this with the percentage of the successful results following operations on the autonomic nervous system, one obtains further insight into the etiology of essential hypertension. As suggested by Nesbit(17), one might infer from these figures that in a large percentage of the cases of this type of hypertension there is a renal ischemia which may result from some mechanical interference with the blood supply to the kidney. Such a condition could not be influenced to any great extent by any

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8. Blackman, S. S., Jr.: Arteriosclerosis and Partial Obstruction of the Main Renal Arteries in Association With Essential Hypertension in Man, Bull. Johns Hopkins Hospital, 65:353, 1939.
9. Dicker, E.: Pathogenesis of Arterial Hypertension, Am. J. Med. Sc., Vol. 199, No. 5, (May) 1940.
10. Williams, J. R., and Harrison, T. R.: Clinical Pictures Associated with Increased Blood Pressure. A Study of 100 Patients, Ann. Int. Med. 13:650, (October) 1939.
11. Schroeder, H. A., and Steele, J. M.: Abnormalities of the Urinary Tract in Essential Hypertension, Proc. Soc. Exper. Biol. and Med. 39:107, 1938.
12. Butler, A. M.: Chronic Pyelonephritis and Arterial Hypertension, J. Clin. Investigation, 16:889, 1937.
13. Leadbetter, W. F., and Burkland, Carl E.: Hypertension and Unilateral Renal Disease (Child), J. Urol. 39:611 (May) 1938.
14. Barker, N. W., and Waltman, W.: Hypertension Associated With Unilateral Chronic Atrophic Pyelonephritis; Treatment by Nephrectomy, Proc. Staff Meet. Mayo Clinic, 13:118, 1938.
15. Boyd, C. Holmes, and Lewis, Lloyd G.: Nephrectomy for Arterial Hypertension. Prelim. Report, J. Urol. 39:627 (May) 1938.
16. McMillan, Thomas M.: Etiological Factors of Hypertensive Cardiovascular Disease, Lecture, Fifth Annual Post-Graduate Institute, Phila. County Med. Soc., Apr. 15, 1940.
17. Nesbit, Reed M.: Hypertension Resulting From Unilateral Kidney Disease, A. C. P. Post-Graduate Course, University of Michigan, Ann Arbor, Mich., March 29, 1940.

operation on the sympathetic or parasympathetic system. These cases, therefore, constitute the surgical failures. In the remainder of the cases there is a renal (and most likely a general) vasoconstriction, probably of nervous origin, which produces the elevation of the pressure. In these instances the operation on the autonomic nervous system is followed by a permanent reduction in the blood pressure. This group constitutes the operative successes.

While these changing views as to the possible etiology of essential hypertension are of significant importance, they are being accompanied by even as great a change in our concept regarding the treatment of the hypertensive state. One of the most discouraging things in the practice of medicine is the utter hopelessness with which the patient afflicted with this disease must be looked upon. No form of medical treatment, of which there have been and are many, has ever cured, checked, or apparently altered to any appreciable degree the progression of the disease. Essential hypertension has continued to exact its toll of human life year in and year out, either in the slowly developing benign form, the course of which extends over many years, or in the more rapidly fulminating malignant form, which results in the death of the patient within two or three years from its onset.

Is it too much to hope that a more effective treatment may be devised that will offer some hope of assistance to these unfortunate individuals? The fact is, as you know, that for the past several years surgical procedures have been suggested and employed as a means of relieving the hypertension and other symptoms of essential hyperpiesis. It is beyond hope, of course, that all cases manifesting an elevated blood pressure will be amenable to surgical treatment, but the fact that even a few may derive benefit warrants the careful consideration of all the facts involved as early after the inception of the symptoms as possible. In this way the patient may be given the opportunity, however small the chance for complete recovery may be, to benefit by operation and to avoid the disastrous consequences otherwise certain to follow.

These newer conceptions of etiology also emphasize the fact that in all cases of hypertension a thorough urological study of the case should be and must be made to determine whether surgery on the urinary tract could possibly offer any hope of relieving the disease.

Schroeder and Fish(18) conclude from their study that the number of cases in this group that can be helped is small. Only 2 out of their total of 7 cases were considerably improved by the operation. They suggest the following criteria for the selection of those cases suitable for this type of treatment:

1. The hypertension should not have existed more than two years.
2. The diseased process should be limited to one kidney, but the kidney involved should manifest a diminution of function.
3. The combined functional activity of the kidneys in regard to urine concentration and urea clearance should be within normal limits.
4. Neither retinitis nor much change in the caliber of the retinal vessels should be present.
5. Hypertension must be a persistent feature of the disease.

These criteria were met in only one case in their series, a fact which may explain the large number of their failures.

Nesbit(17), however, is more encouraging in his report. He states that in a series of 14 cases of unilateral kidney disease showing hypertension, 3 have manifested a return of the pressure to normal following operation and 6 others have shown a very definite improvement. The criteria for operation in his series were not stated.

Excluding nephrectomy and other kidney operations done in case of unilateral urological disease, the operations suggested and performed for the relief of hypertension involve the excision of thoracic and lumbar ganglia, the sectioning of the splanchnic nerves, the resection of the celiac ganglia, and the removal of a part of one or both suprarenal glands. Irrespective of the type of nerve operation employed, the purpose of surgery in these cases is the reduction of the level of the blood pressure, either by increasing the extent of the vascular bed, or, as Goldblatt suggests, by relieving, to some degree, the arteriolar constriction and thus producing a freer flow of blood through the kidneys.

The observation of Blalock, Levy, and Cressman(19) that unilateral renal ischemia

18. Schroeder, H. A., and Fish, G. W., III: The Effect of Nephrectomy Upon Hypertension Associated With Organic Renal Disease, Am. J. Med., Vol. 199, No. 5, (May) 1940.
19. Blalock, Levy, and Cressman: Experimental Hypertension: The effects of unilateral renal ischemia combined with intestinal ischemia on the arterial blood pressure, J. Exper. Med. 69:833, (June) 1939.

superimposed upon intestinal ischemia is productive of prolonged elevation of blood pressure may be significant in this connection. Such operations should tend to relieve ischemia of both the kidneys and the intestinal tract.

The credit for the idea of resecting the splanchnic nerves in the treatment of hypertension must be given to Danielo-polu, who in 1923 first suggested the operation for that purpose. A similar surgical procedure was suggested by Bruening and Stahl in the same year. In 1924 it was proposed before the Congress of Internal Medicine at Milan, by Pende, that the resection of the left splanchnic nerve be employed in the treatment of certain cases of arterial hypertension. Since that time there have been various operations and combinations of procedures advocated and employed in the surgical treatment of the disease. In 1925 Adson performed bilateral lumbar sympathetic ganglionectomy and trunk resection, including the second, third, and fourth ganglia on both sides, on a case of malignant hypertension. There was some symptomatic relief, but there was no material drop in the blood pressure. In the same year Adson carried out unilateral cervicothoracic sympathetic ganglionectomy and trunk resection in a boy eleven years of age who was suffering from the same type of hypertension. In 1932 Craige introduced an operation which included a section of the major and lesser splanchnic nerves below the diaphragm and the division of the sympathetic trunk between the twelfth dorsal and the first lumbar sympathetic ganglia(20). Suffice it to say, without further detail as to operation, Walters, Crile, DeCourcy, Peet and others have each devised procedures and have used them in the treatment of essential hypertension. It seems that irrespective of the type of operation employed the percentage of successful results is about the same among all operators. The criteria on which the success of the operation is based are: (1) complete disappearance of the symptoms; (2) a drop of 40 mm. or more of mercury in the systolic pressure and a decrease of 25 mm. or more in the diastolic pressure, the fall in pressure being maintained.

The chart below presents the number of cases operated on, the results obtained, and the type of operations used by several surgeons who are particularly interested in the subject.

It is obvious that the proper selection of cases will determine to a significant extent the success to be expected from operation. Many patients afflicted with hypertension have arteries which are so inelastic or sclerotic that no possible benefit could be expected from surgery. So too, a patient who is suffering with nephritis, cardiac decompensation, or other complicating factors is not a suitable subject for the procedure. The selection of cases for operation is based upon the following criteria(16):

1. The patient's age must not be over fifty years.
2. Renal function must not be greatly impaired. The nonprotein nitrogen should not be above 40 mg. per 100 cc. of blood. There must not be a marked

Surgeon	*No. Cases*	*Complete Cures*	*Worth-While Drop in B. P.*	*Slight Improv.*	*No Improv.*	*Mortality*	*Operation*
Crile, G. W.(21)	275*	17%	27%	21%	35%	.62%	Celiac Ganglionectomy
De Courcy, J. L.(22)	38**	28%	25%	32%	15%	0	Subtotal Unilateral Adrenalectomy
Peet, Max(2)	375***	15%	48%	16%	8%	3.8%	Supradiaphragmatic Bilateral Resection Greater, Lesser, and Least Splanchnic Nerves
		Good	*Fair*	*Temporary*	*Failure*		
Adson, A. W.(23)	237****	24%	28%	28%	20%	0	Subdiaphragmatic Sympathetic Denervation

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* This number represents only the group of patients upon whom the celiac ganglionectomy has been done.

** This number represents only the group of patients upon whom the unilateral subtotal adrenalectomy has been done.

*** This number represents the group of patients operated upon to August 1938.

**** We were unable to obtain the results of operations according to the criteria given above, so the results are recorded as given in reference 23.

20. Historical data obtained from article by Adson, A. W., Winchell, McK. Craig, and Brown, George E.: Surgery in Its Relation to Hypertension, Surg. Gyn. and Obst. Vol. 62, No. 2 A (Feb.) 1936.
21. Crile, Geo. W.: Answer to Questionnaire, June 3, 1940.
22. De Courcy, J. L.: Answer to Questionnaire, June 3, 1940.
23. Craig, Winchell McK., and Adson, Alfred W.: Hypertension and Subdiaphragmatic Sympathetic Denervation, Surg. Clinics of N. A., Aug. 1939, Mayo Clinic Number.

decrease in the power of water concentration, or in urea clearance, and no marked abnormal urinary findings should be present.

3. There must be a definite response to the cold pressor test and a marked drop in blood pressure under sedation.
4. The state of the heart muscle should be good. Compensation must be intact.
5. Best results are expected when the symptoms are still mild, the disease has not been present over a very long time, and the blood pressure is quite labile.

While the results being obtained by surgery are not as yet spectacular we may at least hope that, with an increase in knowledge and experience, a much greater number of the hypertensive patients soon may be able to obtain relief from their disease.

Summary

1. The Goldblatt theory of renal ischemia as the cause of essential hypertension is outlined. The practical application of the theory is discussed, considering the post mortem findings in cases of essential hypertension, and the various types of kidney pathology associated with hyperpiesia.
2. The results of unilateral nephrectomy in hypertension are stated.
3. A brief historical sketch of the development of the operative procedures designed for the relief of essential hypertension is given. The results of the various operations now most widely employed for the relief of this condition by some of the foremost surgeons working in this field are briefly tabulated.
4. The early and careful study of all cases of essential hypertension is urged. Inasmuch as medical treatment is futile, many of these patients may be relieved surgically if the proper conditions exist and operation is done early.

The Essence of the Scientific Method.—The popular conception of a scientist as a man who works in a laboratory and who uses instruments of precision is as inaccurate as it is superficial, for a scientist is known, not by his technical processes, but by his intellectual processes; and the essence of the scientific method of thought is that it proceeds in an orderly manner toward the establishment of a truth.—Peabody, Francis W.: Doctor and Patient, New York, The Macmillan Company, 1939.

IT MAY BE HELMINTHS

CANDLER A. WILLIS, M.D.

CANDLER

The subject of helminths is, in my opinion, one of utmost importance. I am convinced that a routine stool examination is just as important as a routine urinalysis, although more difficult.

There is a large variety of intestinal parasites. To discuss parasitology in such a short time would be impossible, even if I were capable of doing it. For this reason, and because of my limited experience, I will discuss only four parasites, using the layman's terminology. They are hook worms, round worms, tape worms, and seat or pin worms. I have not tried to differentiate the types of hook worms and tape worms.

Shortly after hanging out my shingle in Candler, I found that a large percentage of my patients were infected with hook or round worms, or both. For this reason I have made it a practice to examine stool specimens from the majority of children treated, regardless of symptoms, and from all adults with indicative symptoms. Following this procedure, I have examined the stools of 400 patients. It seems almost incredible that of this number only 9 have been negative. Some of the patients have had more than one type of infestation. About one-half have had round worms; approximately one half have had hook worms. Some forty have had both. Fifteen cases of pin worms have been found, without doing rectal scrapings. There have been two patients infested with tapeworm.

At first a complete blood count was done on all infested patients, and always showed a moderate anemia with a color index below one. Frequently the differential white cell count showed an eosinophilia, but this was not always present.

Among children with parasites, the most common symptoms, as described by the mother, are that "the child gets pale around the mouth, picks its nose, and wants to eat dirt." The following symptoms have also been relieved by anthelmintic therapy: Bizarre appetites, expressed, as a rule, by a very poor appetite or a desire for sweets, although occasionally a ravenous appetite in

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Read before the Tenth District Medical Society, Marshall, N. C., May 22, 1940.

an undernourished child is found; vague and shifting abdominal pains, which are not suggestive of disease of any specific abdominal organ. Occasionally there is an exception to this, and the symptoms will indicate appendicitis. When this is the case, it is, of course necessary to proceed with the utmost care. In a few cases a stubborn bronchitis was not cleared up until after anthelmintic therapy. Sluggish mental reactions, lassitude, nervousness, or "fidgets", as the mothers frequently say, may be due to helminths. Convulsions have failed to recur in 3 cases after anthelmintic therapy. One of these patients also had a high fever with follicular tonsillitis, which was the probable cause of the convulsion.

In adults the symptoms differ little from those of children. I would like to stress the fact that frequently patients with symptoms suggestive of an abdominal neurosis have been found to have helminths; however, not all these patients have been relieved by anthelmintic therapy.

On physical examination a pale, ill-nourished, nervous individual is often found. In children the abdomen is usually distended—"pot bellied" is really much more expressive. A "doughy" feel is often encountered in the abdomen of a heavily infested patient. As a rule, after I have completed the history and physical examination, I feel that I am dealing with a sick person who presents very little for observation.

The diagnosis is made by patient and careful search for the ova or parasites in the stool. It is frequently necessary to study several slides under the microscope before finding them.

In medical school we learned that one treatment of an adequate quantity of oil of chenopodium or caprokol would remove 90 per cent of round worms or hook worms, and that two treatments would effect a cure. Experience shows three to five treatments—usually five—are necessary to produce negative stools. For the most part one or two doses will diminish or abolish the symptoms, but if the stools are still positive the symptoms frequently will return. This is unfortunate, for it is against human nature to continue disagreeable treatments after the symptoms have disappeared. I have used tetrachlorethylene in a few cases and intend to give it a thorough trial, for in these the results have been satisfactory. As yet I have had no experience with the other anthelmintics for hook worms and round worms.

In treating pin worms my results have been satisfactory, though the literature states that they are difficult to eliminate. To obtain a cure it is necessary to take advantage of the life cycle of the pin worm. As you know, the eggs and an irritant are deposited around the rectum by the female. The irritant causes the patient to scratch and thereby eggs are deposited under the finger nails. If the hands are then placed in the mouth, the cycle is complete, as these parasites do not need an intermediate host. These patients are advised as follows: To wash the rectum thoroughly, not less than three times a day with soap and water; to wear gloves, or tie the hands so the rectum cannot be reached, especially at night. An anesthetic ointment — nupercaine, for example—is applied to prevent itching. By mouth caprokol is given as follows: .1 Gm. per year of age up to ten years, repeated every five to seven days for four or five doses.

The following treatment for tapeworms was used once with a good result: A high calcium diet was administered for ten days. No meat was allowed for three days preceding therapy. On the preceding evening a light meal was given and a saline purge at bedtime. No breakfast was allowed on the following morning. One or two ounces of magnesium sulphate were given in half a glass of water, with 3 cc. of carbon tetrachloride (for children, .2 cc. for each year of age). The patient should remain in bed for twenty-four hours, and calcium gluconate should be on hand for use if toxic symptoms, especially severe vomiting, should occur. Carbon tetrachloride is not to be given with alcohol or fats, and is contraindicated in the presence of hepatic damage. It is necessary to treat the patient for round worms first if they are present.

The following case reports are illustrative.

The patient that started my interest in this subject came to me on August 15, 1938, complaining of pain over her kidneys and sides of four months' duration. She had the symptoms, and the physical and laboratory findings of acute nephritis. From the history and physical examination no focus of infection was found. A 9 per cent eosinophilia was found on making a differential blood count. A stool examination was positive for hookworms. The patient was treated conservatively for ten days without improvement. I felt that caprokol would not further injure her kidneys, and gave her two treatments at ten-day intervals. She began to improve after the first treatment, and improvement continued for six weeks, at which time recovery seemed to be complete. The physical examination and urinalysis were negative. Her health has been perfect since.

The second case is one that has caused me considerable embarrassment. From the physical examination and history I felt sure that the patient had Meniere's syndrome. I gave her large doses of ammonium chloride, with a low salt diet. She remained symptom free for three months. Because she had not experienced such relief for three years I felt that I was correct in my diagnosis and had produced a cure; therefore, when I was asked to give a case report at the Buncombe County Medical Society, I decided to present this one. The day after the *Bulletin* came out stating that I would present a case of Meniere's syndrome, the patient had the worst attack of her life, with extreme nausea and dizziness, and profuse vomiting. A gastric analysis was repeated, and hookworms were found in the material from her stomach. Both hookworms and round worms were present in her stool. She was given four treatments with oil of chenopodium. Since then she has had only an occasional, very mild attack of dizziness without the other symptoms, and states that she has never felt better.

Case 3. A young man of twenty-eight years came to me on January 22, 1939, with a chief complaint of pain in the left upper quadrant and belching up food. He had had these symptoms for eight years, and in an effort to obtain relief he had undergone a tonsillectomy, an appendectomy, and a laparotomy, and several x-ray diagnostic procedures. From the history and physical examination my impression was that of a gastric neurosis. A stool examination was positive for round worms. Three treatments with caprokol relieved his symptoms, but numerous treatments have failed to obtain a negative stool. Occasionally he feels a recurrence of symptoms and repeats his treatment. Why his stools remain positive I don't know.

Case 4. Last December a small, undernourished, pale boy of eight years was brought to the office, with the history that he would not eat, and that he caught one cold after another. Physical examination revealed a pair of badly diseased tonsils, which are to be removed shortly. A stool examination was positive for round worms. Two treatments with oil of chenopodium were given. I saw this boy three weeks ago. He was a transformed child—strong, ruddy, and full of energy. His parents stated that he was eating heartily. Several similar cases have been treated. I have had to give tonics to only three or four children in an effort to increase their appetites. In all other cases anthelmintic therapy has done the trick.

Case 5. About one year ago I saw a twenty-six year old man in my office who was having violent convulsions. I could not determine the cause in spite of as careful a history and as thorough a physical examination as could be done. In the hospital complete laboratory work did not help to clear up the diagnosis. On the third hospital day, while the patient was having another convulsion a large round worm was expelled. The diagnosis was clear. Anthelmintic therapy was given. The patient has been healthy since.

I hope the title of my paper is now clear, and that other physicians will become as interested in the subject as I have been. This is a public health problem as well as a problem for every individual doctor.

DRY ICE TREATMENT FOR HICCOUGH

M. A. Pittman, M.D.
Wilson

The old household remedy of holding a paper bag over the mouth and nose and having the patient breathe in the bag for several minutes has long been used for hiccough. A modification of this remedy makes use of carbon dioxide snow (dry ice), obtainable at any modern drug store or ice cream plant, and water. The procedure is simple: Take a ten-pound paper bag, turn the edges of the bag down, place a four-inch square of dry ice (ten cents worth) and two ounces of water in the bag. Have the patient breathe into the bag for several minutes until the hiccoughing stops. Trials of this remedy at the Woodard-Herring Hospital, Wilson, N. C., have given excellent results.

The tuberculosis disease rate of medical and nursing personnel in modern tuberculosis sanatoria is generally lower than in hospitals not having a properly supervised tuberculosis department.—B. H. Wardrip, Hosp. Management, Dec., 1939.

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NOVEMBER, 1940

POSTGRADUATE EDUCATION

The problem of postgraduate medical education is a perennial one, and no thoroughly satisfactory answer has been evolved. Various solutions have been attempted, such as local clinics, University extension teaching and large symposiums. All of these do some good, no doubt, but none reaches the large body of the profession.

The ideal method probably would be for the practicing physician to return to his own, or to some other medical school for six months' intensive work every few years. Two considerations make this suggestion impracticable. In the first place, such a plan is not economically or professionally possible for the great bulk of practicing physicians; and, secondly, the medical schools are not organized to teach such large numbers of postgraduate students.

The belief is growing among students of this problem that the only really effective postgraduate education is that given to house officers in our hospitals immediately following their graduation. It is in the highest degree probable that if every medical graduate received at least two years of intensive training in hospitals before entering practice, the need for "brush-up courses" would rapidly decline. Too many physicians in the past have entered practice ill-equipped to keep abreast of the rapid current of medical progress, with the sad result that many have stranded on the shoals and in the backwaters of medicine. The future, even more than the past, belongs to the well-equipped physician, for at last the public shows evidences of an interest in good medical practice which may culminate in a less ignorant attitude toward practitioners of medicine.

The good physician must be a life-long student. He should subscribe to and read the current medical literature; he should keep his library modern by the purchase of well-considered books; he should be wary of the plausible book agent. If all physicians were keen students of medicine, the local medical society would be the best place for postgraduate training.

* * * *

A WELL DESERVED TRIBUTE

On Friday afternoon, October 11, a portrait of Dr. Isaac H. Manning was unveiled in the Library of the Medical School of the University of North Carolina. Most fittingly the ceremony came at the conclusion of the Regional Meeting of the American College of Physicians, of which Dr. Manning is an honored member. The presentation was made by one of Dr. Manning's former pupils, Dr. W. Raney Stanford, and the portrait was accepted on behalf of the University by President Frank Graham.

Dr. Manning probably is known by more North Carolina doctors than any other doctor in the state. His long service as Dean of the University medical school and as one of its teachers brought him into close contact with a great many of the practitioners in the state. His year as president of the state medical society, followed by his selection as head of the Hospital Saving Association, made him known to most of the other members of the North Carolina profession. His rugged honesty, his fairness, his good judgment, his ability, and his loyalty to friends endear him to those who know him, and made the opportunity of contributing to the portrait fund a real privilege. The painting is an excellent one, and will be a lasting reminder of Dr. Manning's great service to the University and to the state; but his legion of friends hope that the flesh and blood original will long continue to grace the University halls and campus, as well as medical gatherings, for many years to come.

THE LOCAL USE OF SULFAMIDO COMPOUNDS

The North Carolina Medical Journal is rather proud to publish this month the excellent paper by Dr. J. A. Sinclair, a dentist of Asheville, on the local use of sulfanilamide. The pioneer nature of Dr. Sinclair's work and the timeliness of his paper are evidenced by the fact that the *Proceedings* of the Staff Meetings of the Mayo Clinic for September 25, 1940, contains two articles (1, 2) on this subject. Both corroborate Dr. Sinclair's observations as to the value of sulfanilamide used locally. The first article deals with the use of a saturated solution (.08 per cent) of sulfanilamide in normal saline solution for the irrigation of wounds following resection of the rectum for carcinoma. The sulfanilamide solution was prepared "by heating a physiologic solution of sodium chloride to the boiling point and adding sufficient sulfanilamide to make a saturated solution." Mayo and Miller(1) found that flushing the cavity with hydrogen peroxide preliminary to irrigating with the sulfanilamide solution apparently increased the bactericidal action of the sulfanilamide.

The use of the hydrogen peroxide is based upon the theory of Shaffer that the sulfamido compounds owe their therapeutic effects "to oxidation products of these substances formed by atmospheric oxygen under the catalytic influence of respiring tissues or organisms."

Mayo and Miller conclude: "It is our feeling that the growth of connective tissue is stimulated to some extent by the administration of sulfanilamide. Irrigations with this chemical compound have been effective when other drugs have failed and it is therefore recommended as another agent in the therapeutic armamentarium."

Herrell and Brown(2) have used sulfathiazole and sulfapyridine as well as sulfanilamide in the local treatment of various wounds, chiefly in the form of a thick suspension or as a dusting powder. Their conclusions, which are virtually in agreement with Dr. Sinclair's, are as follows:

"Experimental and clinical observations tend to indicate that the local administration of sulfamido compounds exerts, in a certain number of cases, a definite beneficial effect in the course of infected wounds. This is true of postoperative infected wounds as well as wounds which may result either from accidental injuries or injuries incident to war. Our results following this form of treatment in twenty-one cases are presented. The results are by no means uniform. However, we feel that they are encouraging enough to justify a continuation of this procedure. Sufficient evidence is at hand to indicate that the continued local application of sulfamido compounds as a prophylactic measure in any of the wounds mentioned is justifiable."

* * * *

AN INTRIGUING EXPERIMENT

Doubtless every doctor has longed more than once for some instrument which would measure an individual's ability to endure pain—or, perhaps more important, would register the amount of pain an individual was actually suffering—as accurately as a thermometer registers the temperature. A long step in this direction has been taken by Dr. R. M. Wilder, Jr., and described by him in the *Proceedings* of the Staff Meetings of the Mayo Clinic for August 28, 1940. As in the case of Columbus and his famous egg, the procedure employed for determining an individual's pain index is so simple that one wonders why he himself did not think of it long ago. Dr. Wilder's own description of the technique can not be improved upon:

"The apparatus employed is simple and consists of a piece of roughened metal (such as is used in food graters) which is sewed to the contact surface of an ordinary blood pressure cuff. Without letting the patient know that any test other than that of taking his blood pressure is to be made, the cuff is wrapped on his arm in the usual way, care being exercised to place the metal grater at a point on the medial surface of the arm just above the elbow. The cuff is then inflated as usual; the sensitivity level is indicated by that point at which the patient first shows evidence of distress by wincing, by changing expression, or in some cases by crying out. The nearest 10 mm. mark on the mercury manometer, when such a reac-

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1. Mayo, C. W., and Miller, J. M.: Solution of Sulfanilamide in the Local Treatment of Wounds, Proc. Staff Meet. Mayo Clinic, 15:609 (Sept. 25) 1940.
2. Herrell, W. E., and Brown, A. E.: Local Use of Sulfamido Compounds in the Treatment of Infected Wounds, Proc. Staff Meet. Mayo Clinic, 15:611 (Sept. 25) 1940.

tion occurs, is taken as the pain point. To reduce the possibility of error, the cuff is inflated slowly, increasing the pressure by about 10 mm. of mercury per second. This modified sphygmomanometer cuff may be used in taking blood pressures, and I was surprised to find that the discomfort did not cause much increase in blood pressure in most instances.

"The test was used routinely on an unselected group of patients with one exception, namely, that patients with known moderate to severe hypertension were excluded because: 1. It was believed that frequently it would be necessary to increase the manometric pressure to excessively painful levels in order to obtain the systolic blood pressure. 2. Patients with hypertension usually have had frequent blood pressure readings made in the past and are quicker to notice the unaccustomed sensation when the modified sphygmomanometer cuff is applied."

Dr. Wilder found that "the skin threshold of pain is much lower in women than in men. . . . Slightly more than 61 per cent of the women had pain thresholds lower than 120 mm., whereas only 25 per cent of the men are included in this group."

As was to be expected, an appreciably higher proportion of both men and women with low levels of pain sensitivity were among those that would be classified as constitutional inadequates. A striking illustration of this finding recently came to the attention of a local physician while he was examining an eighteen year old high school girl who complained of frequent "agonizing" headaches—so severe that she could not stay in school. When her blood pressure was taken — without the nutmeg grater attachment in the cuff—she protested loudly that she could not stand the "pain" when the pressure reached 116. She was shielded by her mother—but her father said that she was more interested in boys than in books, and was in imminent danger of failing her examinations.

Dr. Wilder is to be commended for having originated what promises to be a most valuable procedure. Certainly the male sex owes him a hearty vote of thanks for having refuted the canard that women stand pain better than do men.

ILLUSTRATIONS AND EYE STRAIN

The *New England Journal of Medicine* is one of our favorite exchanges, and its content, editorial and scientific, always carries weight. An editorial in the issue for August 15 discusses a problem that is of interest to every one connected with the publication of a medical journal: "The question of how best to reproduce x-ray and other photographs." In order to get the best results in reproducing cuts, our Yankee colleague states, four requirements must be met: The original film must be well taken; the reduction must not be too great; a fine screen must be used; and the cuts must be printed on a heavy grade of coated paper. The editorial explained that the excessive cost of the coated paper forbade its use by the *New England Journal*, and closed with the hope that eventually it would be able to afford this luxury.

The editorial board of the North Carolina Medical Journal has also considered this question of how best to reproduce illustrations, but is convinced that the soft finish book paper we are now using is preferable to the coated or glazed paper, in spite of some loss of detail in the illustrations. Although our printer informed us that the coated paper would cost very little, if any, more than the paper we are now using, we decided against it because the highly glazed surface creates a glare, particularly under artificial light, which is much harder on the eyes than is the soft finish paper. With a magazine made up largely of pictures, such as *Life* or *Look*, the use of glazed paper is necessary; but in such magazines as the *Atlantic Monthly* or *Harper's*, made up chiefly of reading matter, the soft finish paper is used. In the North Carolina Medical Journal, so much more space is devoted to printed matter than to illustrations that we believe the book paper is preferable.

* * * *

The newspapers announce that North Carolina will have the lowest quota of draftees in the nation, because it has the highest proportion of volunteers. Until very recently, at least, the North Carolina medical profession was next to the bottom of the list in the proportion of questionnaires returned. Certainly it does not belong in that lowly position. Have *you* filled out your questionnaire?

CASE REPORTS

CLINICO-PATHOLOGICAL CONFERENCE

DUKE HOSPITAL

August 9, 1940

Dr. William M. Nicholson (reading the clinical summary):

The patient, a forty-three year old colored housewife, was admitted to the hospital in coma that had existed for the previous twelve hours.

The family history revealed no evidence that any of her immediate family had hypertension, heart or kidney disease.

Past History: Previous to 1931, when the patient was first seen in this hospital, her past history is of little interest. In 1931 she was admitted to this hospital, and a diagnosis of chronic pelvic inflammatory disease with intra-abdominal adhesions was made. A laparotomy was performed at this time, and it is interesting to note that the operator made a comment on the dense adhesions found in the pelvis; because of these he felt justified in doing only a hysteromyomectomy. The postoperative course from this operation was quite stormy, and she remained in the hospital for several weeks. After her discharge from the hospital she returned to various clinics, complaining of nausea, vomiting and constipation. These symptoms were interpreted by various observers as being due to partial intestinal obstruction. One year after her first admission she was admitted to the hospital again, and a diagnosis of pyelonephrosis due to ureteral obstruction was made. This diagnosis was confirmed by retrograde pyelograms which showed on the right a tremendously dilated ureter with considerable dilatation of the kidney pelvis. Following ureteral catheterization for drainage of infected urine from that kidney, the patient was discharged greatly improved. She was then followed in the Urological Clinic from time to time, and continued to complain of vague abdominal aches and pains with occasional chills and fever.

The third admission was in 1937, at which time the patient had repeated epidural injections and the application of a right hip spica for the relief of sciatic pain. It is interesting to note that repeated blood pressure determinations during her stay in the hospital and her visits to the out-patient clinics showed her blood pressure to be well within normal limits. From 1937 until May, 1940, the patient had not been seen in the clinics. At that time she was again seen in the clinic, complaining of the same vague aches and pains in her abdomen with occasional chills and fever. Her right ureter was again catheterized, and retrograde pyelograms showed even more distention of the ureter and distention and distortion of the pelvis of the kidney on the right side. For the first time a note is made that her blood pressure was elevated at a level of 180/126.

Present Illness: For one week before her admission to the hospital the patient complained of severe generalized headache, drowsiness, listlessness, nausea and vomiting. She had remained in bed during most of this time. Twelve hours before admission to the hospital she lapsed into a deep coma, from which she could be aroused only with great difficulty.

Physical Examination: The temperature on admission was 37.5 C, the pulse 86 and the respirations 20. The blood pressure was 290/150. The patient was a well-developed, obese Negro female of forty-three who was quite stuporous and could not be aroused. The skin was dry without evidence of dehydration. The pupils were quite small, but reacted to light. There was moderate bilateral exophthalmos. Ophthalmoscopic examination showed the disks to be blurred, but no papilloedema could be made out. The vessels were narrowed, with typical silver wire appearance. There were no hemorrhages or exudates. The breath was not uriniferous. There were a few scattered coarse rhonchi throughout both lungs; otherwise no abnormalities in the lungs could be made out. The heart was not enlarged to percussion; however, the point of maximal impulse was seen in the sixth interspace to the left, 10 cm. from the midsternal line. The sounds were of good quality, and no murmurs could be heard. The second aortic sound was louder than the second pulmonic. The rate was not increased, and the rhythm was regular. Abdominal examination revealed moderate tenderness to deep palpation in the right flank. No masses or viscera could be palpated. The neurological examination showed the motor system to be intact; the extremities were somewhat hypertonic, but no abnormal weakness was noted. The cranial nerves were normal so far as they could be tested. The tendon reflexes were present, equal and active bilaterally. The abdominal reflexes were absent. However, no Babinski sign was present. Sensory examination could not be done.

Accessory Clinical Findings: The hemoglobin was 14.5 Gm. or 93.5 per cent. The red blood cells were 5,300,000. The white blood cells were 8,500 with a normal differential picture. The blood Wassermann and Kahn reactions were negative. Fresh and stained preparations of the peripheral blood showed no marked abnormalities. A catheterized specimen of urine showed a specific gravity of 1.025, an alkaline reaction, no sugar, and a 3 plus reaction for albumin; the sediment showed 5-6 red blood cells, 3-4 white blood cells per high powered field and an occasional granular cast. A lumbar puncture allowed the escape of 20 cc. of clear, limpid fluid under increased pressure. One mononuclear cell was found, and the Pandy reaction was 1 plus. A colloidal mastic test on the spinal fluid gave a curve of 1-2-3-2-1-1, and the Wassermann on the spinal fluid was likewise negative. Blood bromides were negative. Blood non-protein nitrogen on admission was 85 mg. per cent.

Course in the Hospital: The patient was placed at complete bed rest, and fluids were restricted to 1200 cc. per day. Supportive therapy was instituted; however, on the third hospital day the patient's temperature began to rise, and at the end of the fifth hospital day, immediately before death, it had reached a peak of 42 C. On the same day the blood non-protein nitrogen was 175 mg. per cent.

Discussion

Dr. Nicholson: All of the available facts in this patient's history, examination and laboratory studies point toward severe renal damage. There are three pathological conditions that one must consider before arriving at a final and definite conclusion in regard to the underlying pathological changes that we expect to find at postmortem examinations. These are:

1. Chronic glomerulonephritis
2. Malignant nephrosclerosis
3. Chronic pyelonephritis
4. A combination of the above.

Fortunately, we were able to follow this patient over a period of nine years, during which time repeated urine analyses failed to show any increase in the component elements of the sediment. White cells were found on occasions, but only rarely were red cells seen and no casts were described at any time. There was likewise no albumin present in the urine. It is interesting to note, however, that upon catheterization of the right ureter pus cells and bacteria in profusion were found. On the final admission to the hospital red cells were found in the urine, and for that reason glomerulonephritis must be considered. However there were no hemorrhages, exudates or scars in the retinae which one would expect to find had this been glomerulonephritis of long duration.

As far as the question of malignant nephrosclerosis is concerned, the exclusion of this is considerably more difficult; hence, it will be discussed later. There must have been some changes in the kidneys which are compatible with this pathological process.

We have definite evidence, as shown by the x-rays, that pyelonephritis on the right side existed in this patient for a period of eight years.

Dr. Robert J. Reeves: The hydronephrosis of the right kidney seems to be mechanical and probably due to adhesions or a deep mass in the pelvis producing pressure on the ureter. This type of obstruction is gradual and the symptoms are not so evident as when there is a block by a stone.

Dr. Nicholson: With the information at hand, it seems fairly easy to reconstruct the clinical picture that this patient presented. We know that nine years previously she had had a pelvic operation, at which the operator was unable to remove all of the dense adhesions and infected masses that he found in the pelvis. We have seen by the x-rays that the obstruction to the ureter occurred at the pelvic brim. Undoubtedly, the mass in the pelvis was responsible for the obstruction which we see demonstrated in the x-rays. Gradually over a period of years, owing to the obstruction of the ureter chronic pyelonephritis developed. Undoubtedly, had the patient not been catheterized, death would have intervened several years previous to this time. However, sufficient drainage was established from time to time to prolong her life so that the typically small, contracted, diffusely scarred kidney would develop. Under these circumstances it would seem that a modified Goldblatt experiment in the human being had been produced. Undoubtedly, the chronic infection of the right kidney with obstruction to the arterial flow produced the substance that has been described as renin, which has been shown in experimental animals to produce hypertension. From the resulting hypertension arteriolosclerosis must have been produced in the opposite kidney and other organs of the body as well. In reviewing her history again we are unable to state definitely just what was the interval between the onset of the hypertension and her death. We do know, however, that in 1937, three years before her final admission, the blood pressure was recorded as being normal. However, two months before the final admission the blood pressure was 180/126. I would like to present, therefore, as the anatomical diagnosis the following conditions in the order of appearance:

(1) Chronic pelvic inflammatory disease with fibromyoma of the uterus removed at operation with resulting pelvic adhesions.
(2) Chronic pyelonephritis and hydroureter on the right side.
(3) Nephrosclerosis of the left kidney and arteriolosclerosis of the remaining organs of the body.

The final episode is not particularly clear to me. Two questions are to be asked:

(1) Did this patient die from uremia?
(2) Was her death due to cerebral vascular changes such as a hypertensive crisis and not a hemorrhage or thrombosis of the cerebral vessels?

Upon her admission to the hospital there was little evidence of uremia, since her blood non-protein nitrogen was only 85 mg. per cent, the breath was described as not being uriniferous, and there was no bloody diarrhea such as is usually present. It is noted, however, that her blood non-protein nitrogen rose to 175 mg. per cent on the day of her death; however, that may have been related in some manner to the restriction of fluids. While one cannot be sure that this was a so-called hypertensive crisis, I would like to predict that Dr. Baker does not find any evidence that we usually associate with uremia.

Dr. George T. Harrell: I should like to ask Dr. Nicholson if he thinks that this patient would have completely recovered had a nephrectomy been done on the right.

Dr. Nicholson: Yes, it is my opinion that this patient would have recovered had a nephrectomy been done previous to 1937 while she was still being followed in the clinic. It would appear that the production of the pressor substance from the damaged kidney had been more abundant since that time, since the patient had not received further dilatations of the ureter.

Pathological Report

Dr. Roger Baker (presenting gross organs): When the peritoneal cavity was entered at post-mortem examination, fibrous adhesions were found in profusion binding each viscus to its neighbor. In the pelvis the adhesions, particularly dense, were firmly bound to what was left of the uterus. On the right side of the pelvis lay a cystic mass, the largest cyst of which is about the size of a turkey egg and filled with mahogany-colored fluid. It is not clear, even after microscopic study, whether this mass is of "inflammatory" or of ovarian origin. So much dense fibrous tissue is present that relationship and origins are not evident.

At any rate, this mass together with the adjacent connective tissue was sufficient to cause a very marked displacement of the right ureter. The angulation and kinking of the right ureter had produced obstruction. As you note, the whole right ureter from this point of angulation to the right kidney is greatly dilated, measuring 1.5 cm. in diameter. The right kidney is greatly shrunken and weighs only 60 Gm. It shows irregular depressions and also a finely nodular surface. With its dilated pelvis it presents the appearance of an old chronic pyelonephritis or pyonephrosis with scarring. It seems to us entirely possible, as Dr. Nicholson suggests, that the rest of the changes in the body may be dependent upon abnormal secretion of a substance into the blood stream from this damaged kidney.

Turning to the highly contrasting left kidney, we find that this weighs 140 Gm., only slightly less than normal. It has a finely granular surface with many yellowish areas. On this side neither pelvis nor ureter is dilated. The hypertension noted clinically is not apparent in any change in size or weight of the heart, nor is there evidence elsewhere, as in the lungs or liver, of heart failure. Probably the hypertension had not existed long enough to cause cardiac hypertrophy. The lungs are rather heavy. Patches of lobular pneumonia are present. Uremic colitis is absent and there is no fibrinous pericarditis such as is seen in some cases of uremia. The left corpus striatum of the brain contains a slit-like area of encephalomalacia 1 cm. long. This looks old. In the absence of any gross hemorrhage or large area of softening it is felt that the inconspicuous cerebral lesion is not as significant as the increased blood non-protein nitrogen in the fatal outcome. However that may be, the stupor of the patient gave rise to lobular pneumonia, which is the immediate cause of death. Microscopic sections show the pneumonia to be extensive.

The kidneys are, of course, extraordinarily interesting in microscopic section. The right one shows healed chronic pyelonephritis in most areas. In some regions, however, the picture is that of the left kidney. In the left kidney, glomerulonephritis can be ruled out. Arteriolosclerotic vascular changes are present in this kidney (and in the right kidney, too) as well as in the pancreas, spleen, and fibrous capsule of the adrenal glands. Also some thickening of the medium-sized vessels of the left kidney is noted. A great deal of recent tubular damage is present, with much fat and some hyalin droplets. Also necrotic changes in the glomeruli are noted and thickening of the basement membrane, which often goes along with hypertension. But in addition to all this, as one might expect in arteriolonephrosclerosis, there is definite infiltration of round cells in the cortex and also a moderate involvement by round cells of the pelvis of this left kidney. Hence, we have definite evidence of minimal chronic pyelonephritis, an incidental process rather than the chief one. Collapsed renal tissue and hyalinized glomeruli are not noted on the left as they were on the right.

From pathological study, therefore, we are inclined to agree with Dr. Nicholson that the pyelonephritis in the right kidney may well have been responsible for the vascular damage of the arterioles throughout the body and for the arteriolar nephrosclerosis on the left side.

With regard to taking out the pyelonephritic kidney there are two considerations. In the first place, we cannot be absolutely sure that at this age, forty-three years, the arteriolosclerosis might not have developed in the absence of chronic pyelonephritis on one side. In the second place, one notes a slight amount of damage in the left kidney due to mild pyelonephritis. The question is whether there is enough damage in this kidney, or was enough damage in this kidney at one time, to have continued the process initiated by the other kidney, so that the removal of the more severely damaged kidney might not have been efficacious in preventing the passage of pressor substances into the blood stream.

Anatomical Diagnosis

Abdominal and pelvic adhesions.
Pelvic cyst with partial obstruction of the right ureter.
Chronic pyelonephritis with scarring, right.
Mild chronic pyelonephritis, left.
Generalized arteriolosclerosis.
Malignant nephrosclerosis.
Lobular pneumonia.
Minute old cerebral infarct.

During the draft the most rigid tuberculosis-control methods must go into effect to prevent a rapid rise of the disease among recruits from rural areas where tuberculosis has not been prevalent, according to Dr. Wm. Charles White, chairman of the Medical Research Committee of the National Tuberculosis Association.

"Among the draftees will be a great number of men who have never been exposed to tuberculosis", continued Dr. White. "When a non-tuberculous group of people is confronted by the disease, the cases that occur frequently run a more acute course."

To avoid the rapid rise of tuberculosis among recruits Dr. White emphasized that there must be a careful and complete elimination of tuberculous men during the draft and throughout cantonment life. This must be done not only to avoid breakdown among those with beginning infection, but also to avoid the spread of the highly communicable disease.

The Practitioner of the Future.—The romantic reverence for the old time practitioner, rich in qualities that made him the family adviser, confidant and friend, is fully justified. I am bold enough to claim, however, that there is in the making a young medical generation which, after a difficult and somewhat bewildering period, will be equally rich in these human qualities but which, in addition, will be able to do more for the welfare of the patients than their predecessors. The young practitioner of the future will be willing to give himself, will understand the springs of human emotions and will be able to give as good care in the majority of medical diseases as the best specialists of today. This new practitioner will once more have the confidence and the respect of the community.—Soma Weiss, M.D.: The Medical Student Before and After Graduation, J. A. M. A. 114:1718 (April 27) 1940.

BULLETIN BOARD

PRESIDENT'S MESSAGE

Socialized Medicine in North Carolina

Socialized Medicine may be described as that form of medical service which is paid for by individuals or groups of individuals through insurance companies or associations. It includes payment for illness, hospitalization and medical care. This form of medical service is growing in popularity in North Carolina.

The Hospital Saving Association of North Carolina, located at Chapel Hill, has 127,000 members, and stands eleventh in the United States in point of membership among the fifty-eight associations approved by the American Hospital Association. This association is sponsored by the Medical Society of the State of North Carolina, and its directorate has among its members officials of the Society. Another large North Carolina association has over 60,000 members. The affairs of these two companies are well conducted, and the larger association is now out of debt and has a surplus.

In soliciting members for surgical and medical care an association goes into a county upon the invitation of the County Medical Society and with the approval of a majority of its members. This procedure is within the limits of the constitution of the Medical Society of the State of North Carolina. Individuals and groups of individuals are being insured. Hospital and medical care is being provided at a very moderate cost for many people of limited means who would otherwise be unable to secure it. Partial payment of medical and surgical bills is now being offered in addition to hospitalization by one of the associations in the state.

There are certain dangers to the medical profession in this procedure. We may be asked by the individual to accept the insurance fees as payment in full for services rendered. This may be a lever for the insurance companies to obtain a lower fee schedule from the Medical Society for services which are incompatible with the fees offered. We may also be setting up a schedule of lower fees for professional services which the Workmen's Compensation Commission may force us to adopt. It must also be remembered that if the funds are not available in the treasuries of the insurance companies the fees will be scaled down and prorated to the physicians to whom the fees are due. Physicians are thus called on to underwrite their own fees.

The danger to insurance companies lies in the fact that many patients will be hospitalized who could be treated at home; that the hospital stay will be prolonged unnecessarily; and that unnecessary tests will be made.

The whole-hearted cooperation of the physicians is necessary to make Socialized Medicine a success. More careful regulation by the insurance companies in the examination of hospital bills is already making for a more efficient financial structure and a prompt payment of just claims and bills. Prolonged stays in the hospital make fewer available rooms for the really sick. It is a natural human desire for a person to want to get his money back in the form of services from an insurance company. We can guide our patients in this matter for their own good as well as for the good of the association. Hospitalization of our sick makes for better care and treatment; more scientific medicine can be practiced; the physician is better satisfied, his work is easier, and he achieves better results. Therefore, we must protect our patients and the plan whereby they may receive hospitalization.

Socialized Medicine is here to stay. Practically 200,000 North Carolinians are members of our two large associations, and their rosters are increasing daily. We should then, as physicians, lend all of our endeavors in perfecting this instrument of good in our state.

News Notes from Duke University

On October 3, the School of Medicine and School of Nursing began their autumn quarters, with an enrollment of 262 students in the former, and 60 students in the latter.

On October 15, Dr. M. V. Giegler, Senior Surgeon of the United States Public Health Service, talked to the students at the daily clinic on "Opportunities in the Public Health Service."

The seventh annual Postgraduate Symposium was held at Duke Hospital October 31, November 1 and 2. The subject was Diseases of Metabolism and Diseases of the Blood Forming Organs.

NEWS NOTES FROM THE UNIVERSITY OF NORTH CAROLINA

Dr. Howard B. Lewis, Professor of Biological Chemistry of the Medical School of the University of Michigan and Director of the College of Pharmacy at Ann Arbor, visited the Medical School of the University of North Carolina the week of October 14-20. He lectured to the Sigma XI Society on "The Chemical Viewpoint in Biology".

The annual regional meeting of the American College of Physicians was held at the Medical School on October 11 and 12. Dr. Charles H. Cocke, of Asheville, Governor for this District, presided. Dr. James B. Bruce, President of the College, was the guest speaker.

On the afternoon of October 11 a portrait of Dr. I. H. Manning, former Dean and Professor of Physiology in the Medical School, now Kenan Emeritus Professor of Physiology, was presented by the Alumni Association of the Medical School to the University. The portrait was hung in the Medical School Library, and was accepted by President Graham for the University.

The total registration in the School of Medicine is 81. There are 48 students in the first-year class and 33 in the second-year. In addition there are 29 graduate students taking courses in the Medical School.

Dr. William L. Fleming was in Hot Springs, Arkansas, during the week of October 13, where he gave lectures in the Postgraduate Training Course at the Venereal Disease Medical Center. These lectures are given under the auspices of the U. S. Public Health Service.

Dr. M. J. Rosenau, Dr. John J. Wright, and Dr. Harold W. Brown were in Detroit, Michigan, during the week of October 6 for the meetings of the American Public Health Association.

Dr. John J. Wright has been at Johns Hopkins in Baltimore for the past six weeks observing the syphilis control work being carried on in the Eastern District by the City of Baltimore.

Dr. W. S. Rankin, Director of The Duke Endowment, Dr. V. M. Hoge, of the U. S. Public Health Service, and Dr. W. C. Davison, Dean of Duke Medical School, were in Chapel Hill Monday, October 21, on an inspection survey.

NEWS NOTES FROM WAKE FOREST COLLEGE

Wake Forest Medical School has been awarded a Carnegie Fellowship in Human Genetics, and the Fellow under this grant is Dr. C. N. Herndon. Dr. Herndon has been added to the staff of the Department of Medicine as a Carnegie Fellow in Human Genetics. He is for the present assigned to Dr. William Allan of Charlotte.

Arrangements have been made for Dr. Laurence H. Snyder, Professor of Medical Genetics at the Ohio State University, to give a series of lectures to the medical students and faculty of Wake Forest College, the University of North Carolina and Duke University during the months of January, February and March.

Dr. Howard H. Bradshaw, Professor of Surgery, attended the meeting of the Association of American Medical Colleges in Ann Arbor, Michigan, October 28-30.

Dr. Robert P. Morehead and Dr. Herbert S. Wells spoke before the Forsyth County Medical Society at the last regular monthly meeting. Dr. Morehead's subject was, "Pathology of Appendicitis." Dr. Wells discussed "Hookworm Infestation" and showed a motion picture made by him of the worms in the gastrointestinal tract of the dog.

NEWS NOTES FROM THE STATE BOARD OF HEALTH

Success of the North Carolina plan for securing voluntary serologic tests among those registering for the draft seemed assured by 11 o'clock Wednesday, when, although material had been sent out for 90,000 such tests, fifteen county health officers had either wired or telephoned the State Board of Health at Raleigh for additional tubes.

* * *

North Carolina led the entire United States in the number of diphtheria cases reported during the week ending September 28, according to official figures just received from Washington by Dr. Carl V. Reynolds, State Health Officer.

For North Carolina, with its 1940 population of 3,563,174, there were 46 cases reported during that week, as compared with 14 cases for New York, with its population of 13,379,662. Cases reported from surrounding Southern states were as follows: Virginia, 10; South Carolina, 8; Georgia, 18; and Tennessee, 10.

Dr. Reynolds pointed out that during the corresponding week in 1939 there were 115 diphtheria deaths in North Carolina, but that this year, "with North Carolina's compulsory immunization law requiring inoculation of all infants during the first year of life and as a condition of admission to any school, public, parochial or private, now in full force and effect, the number of cases should have been practically nil. This law became effective January 1, 1940."

* * *

Sixty-three trainees, the largest number on record, have registered in the School of Public Health of the University of North Carolina, it was announced here by Dr. Milton J. Rosenau, the dean. This school is attended by trainees from Region No. 2 of the United States Public Health Service, which includes nine states from Delaware to Florida, including West Virginia.

NEWS NOTES FROM THE NORTH CAROLINA TUBERCULOSIS ASSOCIATION

The October Bulletin, monthly publication of the National Tuberculosis Association announces that Dr. P. A. Yoder has been selected on the Nomination Committee of the American Trudeau Society. Dr. Yoder is the Superintendent of the Forsyth County Sanatorium and a member of the Executive Committee of the North Carolina Tuberculosis Association.

Three new county tuberculosis associations in Craven, Wayne, and Lenoir Counties have been formed this fall.

NORTH CAROLINA NEUROLOGICAL AND PSYCHIATRIC ASSOCIATION

The North Carolina Neurological and Psychiatric Association met at the State Hospital in Goldsboro on October 25 at 2:30 p. m. A clinic was held, with the presentation of a number of interesting cases by the State Hospital Staff. This was followed by a talk on "Differences in Insanity as it Occurs in White and Negro Races", by Dr. F. L. Whelpley, and a demonstration of electric convulsion therapy in mental disorders. Dr. S. E. Barrera, Principal Research Psychiatrist of the New York State Psychiatric Institute and Hospital, gave an address on "Some Recent Studies in Epilepsy." A barbecue dinner was served at 5:00 p. m.

Thermal Belt Medical Society

The Thermal Belt Medical Society met at the American Legion Community Building in Shelby on October 17 at 7:00 p. m. The following program was presented:

"X-Ray Treatment of Infections"—Dr. J. Rush Shull, Charlotte

Discussion by Dr. Allen Tuggle, Charlotte.

Case Report—Dr. J. H. McNeill, North Wilkesboro.

"Diathermy and Fever Therapy as Supplementary Therapy in Problem Cases"—Dr. J. S. Holbrook, Statesville, and Dr. Felda Hightower, Raleigh.

Fifth District Medical Society

The Fifth District Medical Society held a meeting at the new Veterans Hospital in Fayetteville on October 24, at 3:30 p. m., with the medical officers of the hospital as hosts. Dr. B. A. Cockrell, Chief Medical Officer, gave a talk on "History of and Benefits Provided by the Veterans Administration"; Dr. J. Lamar Callaway, Professor of Dermatology at Duke University, spoke on "Control of Syphilis: The Practitioner's Problem"; Dr. W. M. Bland, Chief Surgeon, gave a paper on "Preoperative Diagnosis of Gall Bladder Diseases"; and Lt. Col. John H. Sturgeon spoke on the "Physical Requirements for Enlistment in the United States Army". Dinner was served following the scientific meeting.

Seventh District Medical Society

The Seventh District Medical Society will hold its next meeting in the Y. M. C. A. at Kannapolis on November 19. There will be four papers and a two-hour clinic on medicine. A banquet will be held at the Hotel Concord in Concord at 7:00 p. m., followed by the scientific address.

Eighth District Medical Society

The Eighth District Medical Society held its fall meeting on October 30, at the Belvedere Hotel in Reidsville at 2:00 p. m. The following program was presented at the afternoon session:

"Diagnosis and Treatment of Upper Urinary Tract Infection"—Dr. L. W. Holladay, High Point.

"Surgical Aspects of Peptic Ulcer"—Dr. W. H. Sprunt, Jr., Winston-Salem.

"Treatment of Pneumonia with Reference to Chemotherapy"—Dr. Roy C. Mitchell, Mt. Airy.

"Eclampsia Placenta Previa and Cesarean Section"—Dr. R. B. Dunn, Greensboro.

"Treatment of the Menopause"—Dr. G. C. Cook, Winston-Salem.

"Diabetes and Its Complications"—Dr. J. T. Taylor, Greensboro

"Low Back Pain"—Dr. J. F. Register, Greensboro.

Dinner was served at 6:30, and Dr. C. C. Carpenter, Dean of the Bowman Gray School of Medicine of Wake Forest College, gave an address on "The Medical School and Medical Practice".

Halifax County Medical Society

The Halifax County Medical Society met in regular session, with a full attendance, at Roanoke Rapids Hospital on Friday evening, October 11. Dr. Wilburt C. Davison of Duke University School of Medicine was guest speaker of the evening. Dr. Davison, whose subject was "Treatment of Diarrhea in Infancy and Immunizations for Childhood Diseases", presented a most interesting discussion on this topic.

Buncombe County Medical Society

The Buncombe County Medical Society held its eighteenth meeting for 1940 on October 7 at 8:00 p. m. at the City Hall in Asheville. Dr. F. Webb Griffith, Chairman of the Preparedness Committee of the Medical Society of the State of North Carolina gave a most instructive talk on "Medical Preparedness", listing the results of his recent trip to Chicago on this matter. At the business session held following this talk, Dr. C. C. Orr, Sr., was elected as chairman of a draft advisory committee for the physicians of Buncombe County, with Dr. L. M. Griffith and Dr. O. F. Eckel to serve on the committee. Dr. C. C. Orr, Jr., was received into the Society by transfer from Charlottesville, Va., and Dr. Eugene M. Carr was reelected into the membership of the Society.

At the second monthly meeting of the Society, held on October 21, a paper on "Addison's Disease" by Dr. Paul H. Ringer and Dr. Wilson Pendleton was presented, and a Case Report on "Carotid Sinus Syndrome" was given by the guest speaker, Dr. James R. Saunders of Morganton.

Guilford County Medical Society

The Guilford County Medical Society held a business meeting on October 3 at the King Cotton Hotel in Greensboro at 6:30 p. m. A committee consisting of Dr. C. C. Hudson, chairman, Dr. Fred Patterson, Dr. R. B. Davis, and Dr. A. C. Banner was appointed to coordinate the welfare clinics in Greensboro and secure more space for them. A committee on medical preparedness was also appointed, with Dr. I. T. Mann as chairman, and Dr. B. E. Rhudy and J. W. Tankersley as members. An obituary of Dr. J. T. J. Battle was read. The name of Dr. H. C. Lennon was presented for membership by transfer from the Philadelphia County Medical Society. The following officers were elected for 1941: President, Dr. F. M. Patterson; vice president, Dr. B. E. Rhudy; treasurer, Dr. E. D. Apple; secretary, Dr. Wayne Benton; delegate to the State Medical Society, Dr. George T. Wood; Board of Censors, Dr. C. E. Jennings.

Mecklenburg County Medical Society

The first monthly meeting of the Mecklenburg County Medical Society was held on October 1. Dr. Robert H. Lafferty gave a "History of North Carolina Medical College", and Dr. Harry Winkler spoke on "Spontaneous Fractures of the Spine Due to Gradual Decalcification". On October 15 Dr. Tom C. Bost gave a case report on "Gun-Shot Wounds of the Pregnant Uterus", and Dr. Andrew Blair read a paper on the "Clinical Course of Nephrosis".

Charlotte Memorial Hospital

The October issue of the **Bulletin** of the Mecklenburg County Medical Society is devoted to the new Charlotte Memorial Hospital, which was dedicated on October 1 and opened on October 7. At the dedication program addresses were given by Dr. William H. Walsh of Chicago, hospital consultant; Dr. Malcolm T. MacEachern of Chicago, C.M.D.Sc., director of Hospital Activities, American College of Surgeons; and C. Russell Shetterly, associate general counsel, Public Works Administration, Washington. The dedicatory address was given by Governor Clyde Hoey. Dr. Hamilton W. McKay is Chairman of the Medical Advisory Committee, and Dr. Brodie C. Nalle is President of the Medical Staff.

THE A. M. A. BROADCAST

DOCTORS AT WORK is the title of the sixth annual series of dramatized radio programs to be presented by the American Medical Association and the National Broadcasting Company.

The series will open Wednesday, November 13, 1940, and run for thirty consecutive weeks, closing with a broadcast from the A. M. A. meeting at Cleveland, on June 3, 1941. The program is scheduled for 10:30 p. m. Eastern Standard Time over the Blue network, other NBC stations and Canadian stations.

The programs will dramatize what modern medicine offers the individual in the way of opportunities for better health and the more successful treatment of disease. Incidental to this main theme, the programs will explain the characteristics of the different fields of modern medicine and its specialties.

DOCTORS AT WORK will be broadcast from scripts by Wm. J. Murphy, NBC script writer and author of many previous AMA-NBC "shows" and other popular radio features. It will be produced under the direction of J. Clinton Stanley, director of MEDICINE IN THE NEWS, last season's successful AMA-NBC health program. Supervision will be by the AMA Bureau of Health Education, directed by W. W. Bauer, M.D.

Descriptive posters for local distribution may be had gratis from the Bureau of Health Education, American Medical Association, 535 North Dearborn Street, Chicago. Program titles will be announced in The **Journal of the AMA** and monthly in **Hygeia**.

AMERICAN CONFERENCE ON INDUSTRIAL HEALTH

Industrial physicians and manufacturers from all over the country will attend the American Conference on Industrial Health to be held Thursday, November 14, at the Towers Club in Chicago. The conference will be sponsored by the American Association of Industrial Physicians and Surgeons, a 25-year old organization.

This first meeting of the American Conference on Industrial Health has for its purpose the correlation of viewpoints of all persons who are interested in promoting industrial health.

Among the prominent speakers who will talk at the convention sessions are: Dr. Morris Fishbein, editor of the American Medical Association Journal; Mr. B. C. Heacock, president of the Caterpillar Tractor Company of Peoria; Dr. Volney S. Cheney, medical director of Armour and Company; and J. M. Conway, representing the National Association of Manufacturers, New York.

The conference, which is scheduled to begin at 9:30 a. m., will conclude with a dinner session at which Dr. Fishbein and Mr. Conway will speak.

POSTGRADUATE COURSES

The Department of Obstetrics and Gynecology of the University of Chicago and the Chicago Lying-In Hospital through the cooperation of the Children's Bureau, U. S. Department of Labor and the Illinois State Department of Public Health offers five postgraduate courses of four weeks each between January 6 and June 21. The beginning dates of each are: January 6, February 10, March 17, April 21, and May 26. All the members of the department and all services and units of the institution participate in the instruction. Only a limited number of postgraduate students are accepted for each period. A deposit of $25.00 is required, of which $10.00 is returned on completion of the course. All communications should be addressed to: Postgraduate Course, 5848 Drexel Avenue, Chicago, Illinois.

THE GEORGIA PEDIATRIC SOCIETY

The Scientific Committee of the Georgia Pediatric Society wishes to announce that its Annual Scientific Meeting will be held in Atlanta on December 12, beginning with a luncheon at 12:30 and an afternoon and evening session.

The following nationally known physicians will appear on the program:

Lee Edward Farr, M.D., Director of Research of the Alfred I. DuPont Institute, Wilmington, Delaware, will speak on: The Prognostic Value of Renal Function Tests in Nephritis, and The Role of Diet in the Therapy of Nephritis.

Samuel Zachary Levine, M.D., Professor of Pediatrics, Cornell University Medical College, New York, will speak on: The Handicaps of Prematurity and How to Meet Them, and Water and The Growing Organism.

Edward F. Bland, M.D., Instructor of Medicine, Harvard Medical School and Assistant Physician Massachusetts General Hospital, Boston, Massachusetts, will speak on: The Manifestations of Rheumatic Fever in Childhood, and the Course of Rheumatic Heart Disease in Childhood and Adolescence.

Scientific Committee Georgia
Pediatric Society
W. W. Anderson, M.D.
C. Dixon Fowler, M.D.
Joseph Yampolsky, M.D., Chm.

ANNOUNCEMENT TO AUTHORS

An announcement from Colonel Harold W. Jones, Librarian of the Army Medical Library in Washington, states that "Authors' reprints are gratefully received at the Army Medical Library. They are placed in a special collection catalogued by author and thus form a ready bibliography of the work of any given writer and a valuable supplementary source of material when the volume of original publication is temporarily unavailable at the bindery or on loan."

CORRECTION

In the article by Dr. Roy Norton, "A Quarter-Century of Health Progress in North Carolina", which appeared in the October issue of the **North Carolina Medical Journal**, there was a mistake in the table of Illnesses and Deaths in North Carolina for 1914 and 1939. Under Infants Under One Year, for 1914, the number of deaths should read 6,224 rather than 62,245; and for 1939, the number should read 4,704 rather than 47,046.

NEWS NOTES

Dr. William B. Adams, formerly of Indianapolis, has opened offices in the Professional Building in Charlotte for the practice of anesthesia in association with Dr. William Hamer.

* * *

Dr. Duncan Calder has located in Charlotte for the practice of surgery. He has offices with Dr. T. D. Sparrow in the Professional Building.

* * *

Three North Carolinians have qualified for appointment in the United States Navy medical corps and have been commissioned with the rank of lieutenant (junior grade).

Those commissioned are Walter E. Brown of Rocky Mount, John H. Keller of China Grove and Grant F. Mollring of Smithfield. All are practicing physicians.

Their rank of assistant surgeons became effective as of October 2.

WOMAN'S AUXILIARY

A STATEMENT FROM THE WOMAN'S AUXILIARY TO THE AMERICAN MEDICAL ASSOCIATION

The Woman's Auxiliary to the American Medical Association is making a special effort at this time to awaken wide-spread interest in its activities, by increasing the number of readers of the *Bulletin.*

This little booklet is a successor to the News Letter which for many years has kept the officers and board members acquainted with the progress of the Auxiliaries of all the States. It is published quarterly and contains reports of conventions, places of work, inspirational messages from leaders, and news of the hour in the medical world.

It is a great help in promoting interest in local Auxiliaries, especially where the program is new.

The Fall issue contains the inaugural address of Mrs. V. E. Holcombe, the National Auxiliary president. Also a message to women from Dr. Van Etten, president of the American Medical Association. Many other interesting items are to be found within its forty pages. It is hoped to have 6000 women, one-fourth of the membership, reading the *Bulletin* before the year is over. In this way the members may keep abreast of the trends in the medical world and be better able to function as members and leaders of the Auxiliaries in local, state, and national.

The cooperation of the Advisory Councils and the good-will of all members of Medical Associations is earnestly requested.

MRS. GEO. H. EWELL, *Editor*

MRS. H. E. CHRISTENBERRY, *Cir. Mgr.*

MEETING OF THE NINTH DISTRICT AUXILIARY

The Ninth District Medical Auxiliary held its fall meeting at the Mooresville Hospital Nurses Home on Thursday, September 28, with the Mooresville doctors' wives as hostesses.

The meeting was called to order by the acting president, Mrs. Alfred A. Kent, Jr., of Granite Falls. Mrs. Ralph Lore of Lenoir, secretary-treasurer, read the minutes of the preceding meeting held in Morganton in 1939. Mrs. Carl V. Reynolds of Raleigh, a special guest, was recognized. Mrs. Clyde R. Hedrick, President of the Woman's Auxiliary to the Medical Society of the State of North Carolina, spoke on some of the workings of the State Auxiliary, urging the local doctors' wives to organize. She brought out the fact that active county and district auxiliaries make for a more enjoyable State Auxiliary meeting.

The following officers were elected for 1941:

President—Mrs. L. M. Little, Statesville

Vice President—Mrs. O. J. Corpening, Granite Falls

Secretary-Treasurer — Mrs. C. L. Bittinger, Mooresville

Mrs. C. L. Wilson of Lenoir was named chairman of the nominating committee. The 1941 meeting of the Ninth District Medical Auxiliary will be held in Statesville in September. The date is to be announced.

The auxiliary was entertained at tea in the homes of Mrs. G. W. Taylor and Mrs. A. B. Sloan. At seven o'clock the ladies joined the doctors of the Ninth District Society for dinner and for the address by the guest speaker of the society.

BOOK REVIEWS

Physical Diagnosis. By Ralph H. Major, M.D., Professor of Medicine in the University of Kansas. Second Edition, 464 pages with 437 illustrations. Philadelphia and London: W. B. Saunders Company, 1940. $5.00.

The second edition of this excellent work on physical diagnosis brings the subject up to date; the excellent illustrations make the text more vivid; and Dr. Major's ability to write clearly and with sustained interest makes the study of physical diagnosis really attractive. While the author goes into detail in explaining the various techniques employed in examining a patient, he has the happy faculty of using every word in its right place, and of never using a superfluous word. The final chapter, "History taking and recording", is packed with common sense advice by which the medical student or practitioner may well profit.

It gives a North Carolinian a thrill of pride to see in the preface that our own Dr. Frederic M. Hanes is given special mention as having "suggested numerous improvements in arrangement, text, and in presentation."

Bacillary and Rickettsial Infections, Acute and Chronic. By William H. Holmes, Professor of Medicine, Northwestern University Medical School; Chairman, Department of Medicine, Passavant Memorial Hospital, Chicago. 676 pages. New York: The Macmillan Company, 1940. $6.00.

This book is unique in the field of medical publications. As Dr. Holmes states in the preface, it is not intended to be a complete textbook of medicine, but represents only the teaching of a quarter of the course on didactic medicine at Northwestern University Medical School. The first impression one gets as he begins reading the book is that it is the work of a scholar. It gives far more of the historical background of the diseases considered than does the average medical textbook. The marginal annotations make it much easier to follow the text.

The diseases included in the book are listed as follows: The Pasteurella Infections, including Plague and Tularemia; the Rickettsial Infections, including Typhus Fever, Rocky Mountain Spotted Fever, Fievre Boutonneuse, African Tick-Typhus, Tsutsugamushi Fever; The Brucella Infections, including Undulant Fever; The Enteric Infections, including Cholera, Typhoid Fever, Paratyphoid Fevers and Acute Gastroenteritis, the Dysenteries and Clinically Related Conditions; Bacillary Intoxications, including Diphtheria, Botulism, Gas Gangrene; Hemophilus Infections, including Whooping Cough and Influenza; the Mycobacterial Diseases, including Leprosy, Tuberculosis, and Sarcoidosis; and Miscellaneous Bacillary Infections, including Anthrax, Glanders, Melioidosis, Lymphangitis, Epizootica, Swine Erysipelas and Erysipeloid, Rat-bite Fever, Necrobacillosis and Fusospirochetosis, Oroya Fever and Proteus Infections.

While this reviewer is in accord with the author's view that "the mere accumulation of facts . . . cannot be regarded as an ideal form of education", and that it would be far more satisfying to "find the time to study medicine as it has slowly evolved", it is hard to understand just what criteria were used in evaluating the relative importance of certain diseases. For example, diphtheria and typhoid fever are each discussed for more than 50 pages, while regional ileitis and chronic ulcerative colitis together are given only a trifle more than four pages. The first two diseases are fast becoming medical curiosities, while the latter two are of increasing interest and importance.

Doubtless later editions of the book will be better balanced as to content. The minor criticism offered is not intended to detract from the value of the volume as a well-written, scholarly and authoritative work. Further volumes along the principles of this one will be awaited with interest.

Conservation of Iron.—The iron conserving mechanism of the body is remarkable in that none of this iron reserve is lost in any appreciable degree through excretion. When hemoglobin disintegrates to form bilirubin and the other bile pigments, the iron bearing hematin is split off early in the process to be conserved within the body and apparently reutilized in the formation of new hemoglobin. What, then, are the sources of loss of iron from the body, and through what channels may this reserve be depleted? We may say specifically that this may occur only through the processes of bleeding, of pregnancy and lactation, and of growth.—Philip F. Eckman, M.D.: Indications for Use of Iron in Treatment of the Anemias, Minnesota Medicine, 23:713 (October) 1940.

In Memoriam

John Thomas Johnson Battle, M.D.

1859-1940

By William M. Jones, M.D.

Dr. Battle died after a short illness in the early morning of September 30 of coronary occlusion.

He was born in Wake County and spent his early years in and around Wake Forest College, from which he received his M.A. degree. He then entered the College of Physicians and Surgeons, now combined with the University of Maryland, where he received his M.D. degree in 1884. He practiced a while at Wadesboro. In 1896 he married Miss Dora Burns of Wadesboro, and in 1898 he moved to Greensboro, where he soon acquired the confidence of the community and of his confreres.

During the World War he was Chairman of the District Advisory Board for military service. He was a member of the Guilford County Board of Health from its organization in 1911.

He was for years a Trustee of both Wake Forest and Meredith Colleges, and was very active on the Board of the latter at the time of his death.

He was one of the pioneers of life insurance in Greensboro, and was Medical Director of the Jefferson Standard Life Insurance Company, having served in that capacity since 1918.

He was always a constant attendant at the meetings of his County and State Medical Societies, and for years has been an Honorary Fellow of both Societies. He served on the Board of the Medical Examiners of the state from 1902 to 1908.

He was a perfect example of a Christian gentleman, and like St. Luke, was a beloved physician.

> "Abou Ben Adhem (may his tribe increase!)
> Awoke one night from a deep dream of peace,
> And saw, within the moonlight in his room,
> Making it rich, and like a lily in bloom,
> An angel writing in a book of gold:—
> Exceeding peace had made Ben Adhem bold,
> And to the presence in the room he said,
> What writest thou? The vision rais'd its head,
> And with a look made of all sweet accord,
> Answer'd, The names of those who love the Lord.
> And is mine one? said Abou. Nay, not so,
> Replied the angel. Abou spoke more low,
> But cheerly still; and said, I pray thee, then,
> Write me as one that loves his fellow-men.
> The angel wrote, and vanish'd. The next night
> It came again with a great wakening light,
> And show'd the names whom love of God had blessed,
> And lo! Ben Adhem's name led all the rest."

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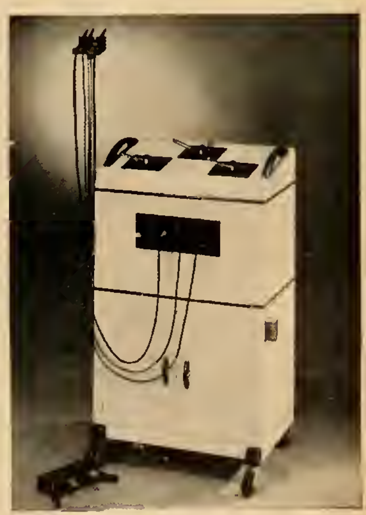

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SULFAPYRIDINE AND SULFATHIAZOLE IN THE TREATMENT OF PNEUMONIA

D. SERGEANT PEPPER, M.D.

PHILADELPHIA

The reduction in the pneumonia mortality during the past year in the United States is only a reflection of the same saving of lives in this disease throughout the world. Without any doubt this decrease is the result of sulfapyridine therapy in pneumonia. Since the introduction of this drug came so soon after the great advancements in serum therapy in this disease, there were naturally many men adverse to giving up one proven form of treatment for a drug about which relatively little was known. These, however, were for the most part men in the larger cities who had the laboratory aids so necessary to the proper use of this type of treatment. The men in the smaller communities and away from expert laboratory aid were not so thoroughly convinced of the benefits to be obtained from serum therapy. These were the men who derived the greatest advantage from the use of sulfapyridine. These men are now sold—to use the common expression—on this drug.

Recently a new drug, sulfathiazole, has been added to our therapeutic armamentarium. The results in the treatment of pneumonia with this drug have been so encouraging that the Pennsylvania State Department of Health has added it to the list of drugs available without cost to those patients with pneumonia to whom the expense would constitute a hardship. The department will continue to provide serum and sulfapyridine. It is felt that if doctors believe in serum therapy and wish to continue its use, they should be given that right. It is also felt that in severe or complicated cases and in those rare cases caused by sulfapyridine-resistant strains of pneumococci, antipneumococcic serum may well determine the result. Sulfapyridine is continued on the list for two main reasons. It may still be the most therapeutically active drug in the treatment of pneumococcic pneumonia, and it is not fair to expect the practitioners of the state to change so quickly to a new drug after they have just found out how successful the last one was in their cases. Sulfathiazole has been added because in the opinion of the Commission of Pneumonia Control it forms today the most satisfactory drug for the treatment of pneumonia. We do not expect that many of the doctors in the smaller communities will use it early this winter, but we feel that before the end of the winter it will largely supplant sulfapyridine.

What are the advantages of this drug, sulfathiazole, that warrant its use instead of sulfapyridine?

Sulfapyridine

A year ago sulfapyridine had been used in the treatment of thousands of cases of pneumonia in all parts of the world with uniformly good results. There was little doubt in the minds of most doctors that a tremendous advance had been made in the treatment of this disease. Today this belief is still more firmly implanted. Whereas the mortality of lobar or typical pneumococcic pneumonia was formerly 25-30 per cent in untreated cases, it is now only 5-10 per cent in cases adequately treated with sulfapyridine. The dosage used today is still about

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Read before the Ninth District Medical Society, Mooresville, September 26, 1940.

the same as that advised last year—that is, an initial dose of 2-4 Gm. and then 1 Gm. every four hours until the temperature has been normal for at least twenty-four to forty-eight hours. It is then probably best to lower the dosage to 4 Gm. a day for two or three more days. Higher dosage, the use of sodium sulfapyridine, or the combination of anti-pneumococcic serum and sulfapyridine is advised in the more severe or complicated cases. We still give the sodium sulfapyridine in the dosage advised last year. This is .06 Gm. per kilogram given as a 5 per cent solution in distilled water. The dose may be repeated in four to six hours.

The toxic reactions of sulfapyridine are perhaps better understood today after another year's experience. The most common and distressing form is the nausea and vomiting seen in a high percentage of cases. This appears to be caused chiefly by a central nervous system effect, and only partially by local irritant action on the gastric mucosa. Various methods have been employed in the treatment of this reaction without very good results. Drug fever and toxic dermatitis are seen in a small number of cases. Acute hemolytic anemia is seen rarely, usually in the first few days of treatment. Careful clinical observation—watching for the onset of pallor of the mucous membrane or the development of jaundice — and repeated laboratory studies of the blood and urine should make diagnosis of this last reaction fairly simple. Treatment, which is almost invariably successful, consists in discontinuing the drug and giving transfusions.

The two most serious toxic reactions from sulfapyridine are still agranulocytosis and renal damage from the crystallization of the acetylated drug within the renal tubules or pelvis, the ureters or the bladder. This precipitation has been described only once, I believe, as having been found in the renal tubules, and animal experimentation and clinical reports have shown that it occurs most frequently in the pelvis and ureters, and that the great danger lies in the complete blockage of these pathways, usually at the junction of ureter and bladder. Most of these reactions have occurred early in treatment, and, I believe, are in many cases avoidable. Too frequently in hospital practice the patient when admitted is already dehydrated by poor treatment at home and then is put through twelve to twenty-four hours of vigorous diagnostic routine before a definite plan of therapy is evolved. Perhaps a preliminary diagnosis of pneumonia is made and sulfapyridine is started before the history and physical examination have been completed, a blood culture obtained, and an x-ray made. The patient thus enters his second hospital day with a high sulfapyridine blood level, dehydration, and now, in addition, nausea and vomiting. Until adequate fluid balance is obtained, the kidneys will attempt to conserve fluid by concentrating the urine until perhaps the critical level of crystallization of the very insoluble acetyl-sulfapyridine is reached. Therefore, I feel it is the clinician's duty, before giving sulfapyridine, to evaluate carefully the fluid balance of his patient and to take the proper measures to get it back to normal. During the course of treatment such events as protracted vomiting must be counteracted by the administration of intravenous fluid. Because of the high incidence of this toxic reaction in the Chinese and the natives of New Guinea, it has been postulated that other factors, such as vitamin deficiencies, may influence the formation of these urinary concretions. In the acute case it is improbable that vitamin therapy will be sufficiently effective to change the outcome. Careful study of the urine for increasing amounts of albumin, sulfapyridine crystals and red blood cells may prevent a fatal outcome. It has also been noted that there is usually a prodromal fall in output of urine the day before complete anuria develops, and for this reason, as well as to assure adequate fluid intake, an accurate intake-output chart should be kept on every patient getting large doses of this drug. A number of reports have appeared in the literature where ureteral catheterization has been done following blockage of the ureters with acetyl sulfapyridine crystals, and the obstruction thus overcome. Certainly this should be tried if this complication arises.

The occurrence of agranulocytosis or granulopenia due to sulfapyridine has been seen very infrequently in the treatment of pneumonia. This type of toxic reaction most frequently occurs around the tenth day of sulfapyridine treatment, and after 50 Gm. of the drug have been given. In the routine treatment of pneumonia, the average length of treatment is only four to six days, and the average dose of the drug is between 25 and 30 Gm.

The important thing to remember is that

blood counts and urinalyses should be done early in the course of sulfapyridine therapy in order to detect the development of acute hemolytic anemia and renal damage, and that blood counts should be done late in treatment in order to discover granulopenia.

Sulfathiazole

About a year ago we first began to hear of two new drugs, sulfathiazole and sulfamethylthiazole. The first clinical reports dealt with their use in staphylococcic and urinary tract infections. Later animal experimentation showed that they were therapeutically active against pneumococcic infection, and during the winter of 1939-40 over a thousand cases of pneumonia were treated with these drugs. Sulfamethylthiazole was soon found to cause peripheral neuritis, and for this reason was withdrawn from clinical investigation. Sulfathiazole, on the other hand, was so successful that now it is no longer in the experimental stage, but is on the market and available to all.

Sulfathiazole in the experimental animal differs but little in toxicity from sulfapyridine. In some species the toxicity appears to be less, in others slightly more than that from sulfapyridine. The number of animals, particularly monkeys, developing renal concretions has, however, been higher with sulfapyridine than with sulfathiazole. A striking difference has been observed in the location of the urinary concretions at autopsy. Whereas they have been found in the ureters and bladder with sulfapyridine, the sulfathiazole concretions have been found in the convoluted tubules of the kidney.

In vitro as well as *in vivo* sulfathiazole has, like sulfapyridine, a wider sphere of antibacterial action than does sulfanilamide. Both drugs are chemotherapeutically active against pneumococci, streptococci, staphylococci, meningococci and gonococci. Sulfathiazole does not seem to be quite as active experimentally against the pneumococcus and streptococcus as sulfapyridine, but more so than sulfapyridine against the staphylococcus and streptococcus fecalis. Recent *in vitro* experiments suggest that sulfathiazole has definite activity against the typhoid dysentery group of organisms.

The pharmacology of sulfathiazole in the human body shows that it is rapidly and regularly absorbed and that in general it is less conjugated in the body than sulfapyridine, leaving more of the active free drug in circulation. It is also more rapidly excreted through the kidneys, and certain investigators have found that whereas there is tubular reabsorption with sulfapyridine, there is little or none with sulfathiazole. Blood level determinations for sulfathiazole have been performed by the method suggested by Marshall and Litchfield(1) for sulfanilamide. It is to be noted that these investigators warned that this method might not apply to other sulfonamide compounds. Actually we have found in our laboratory that whereas the method was accurate in sulfapyridine determinations, it has been inaccurate by as much as 14 per cent in determinations of the amount of sulfathiazole in blood. This invalidates some of the conclusions drawn by investigators who have used this method. Interestingly enough, the recovery of added acetylated or conjugated sulfathiazole in blood is even more inaccurate, and it is quite possible that some of the reported low percentages of acetylation of sulfathiazole as compared with sulfapyridine may derive from inaccuracies of determination.

It does seem true, however, that a certain dose of sulfathiazole will in the great majority of cases produce a more uniform blood level than is the case with the administration of sulfapyridine. One other pharmacological difference between these two drugs is worthy of mention. Several investigators have found that sulfathiazole diffuses poorly into the cerebrospinal fluid and have suggested for that reason that this drug should not be used in cases of meningitis. This is hard to evaluate, however, in view of the clinical reports. There have been several reported cures of staphylococcic meningitis with sulfathiazole, and at the University Hospital in Philadelphia we had the unique experience of treating three attacks of type 18 pneumococcic meningitis in the same patient. The first two attacks were treated with sulfapyridine and type specific antiserum; the last attack was treated with sulfathiazole. The fall in temperature was just as rapid with sulfathiazole as with sulfapyridine. Perhaps we will not be able to correlate recovery in meningitis with the level of sulfathiazole in the spinal fluid. Certainly it has been very difficult to correlate recovery in pneumococcic pneumonia treated with sulfapyridine with the blood level of this drug.

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1. Marshall, E. K. Jr. and Litchfield, J. T. Jr., in Science 88:85, 1938.

Whatever the final answer may be to this question, it would seem wiser at present to use sulfapyridine in all types of meningitis except those due to the staphylococcus.

At the University Hospital we have employed the same dosage that Flippin and his associates(2) have used at the Philadelphia General Hospital. This consists of an initial dose of 3 Gm., followed in four hours by another dose of 3 Gm., and then 1 Gm. every four hours until the temperature has been normal for three to four days. Because of the rapidity of absorption and excretion of the drug, the interval between doses should not exceed four hours. Four hour dosage will, however, maintain an adequate level. In severely ill patients or those with complicating disease, this dosage can be increased to three-hour dosage, or to 2 Gm. every fourth hour.

The dosage then corresponds closely to that of sulfapyridine save for a larger initial dose. The soluble sodium sulfathiazole is apparently equally as effective as the sodium salt of sulfapyridine, and is given in the same dosage—.06 Gm. per kilogram. Unfortunately, a sufficient number of cases treated with this form of the drug have not been reported to the Federal Food and Drug Administration, and they have not felt that it was safe to release the drug for general use. We have treated a number of cases at the University Hospital with this preparation, giving it in the same manner as the sodium salt of sulfapyridine—intravenously in a 5 per cent solution in distilled water. As far as we can determine, the toxic effects are the same as when the drug is given by mouth.

Flippin and his associates(2) at the Philadelphia General Hospital have had the greatest experience with the use of sulfathiazole in the treatment of pneumonia. They have reported a comparative study of 100 cases treated with sulfathiazole and 100 cases treated with sulfapyridine, and have shown that if there is any significant difference in the mortality rates of the two series, it is in favor of sulfathiazole. Series of cases reported by Blake(3), Spink(4), and others have shown the same good results, and together with the series of patients(5) which I treated at the Graduate and University Hospitals of the University of Pennsylvania prove, I believe, beyond any possible chance of error, that sulfathiazole will effect a cure in pneumococcic pneumonia in very approximately the same percentage of cases as will sulfapyridine.

The fall in temperature does not seem to be as abrupt with sulfathiazole as with sulfapyridine in spite of the larger initial dose. This fact suggests that the anti-pneumococcic effect of sulfapyridine is greater than sulfathiazole, although it may be argued that sulfapyridine has a greater antipyretic action. Kneeland and Mulliken(6) have been very much interested in the antibody response in the human being in cases of pneumococcic pneumonia treated with sulfapyridine and sulfathiazole. They found, as have others, that there is a very poor antibody response following sulfapyridine therapy; in fact in only 25 per cent of their cases could they detect antibodies following recovery. With sulfathiazole, on the other hand, in 75 per cent of their cases they discovered antibodies which usually appeared at the time of recovery from the infection. It is their opinion that the more rapid action of sulfapyridine precludes antibody formation, and that with sulfathiazole the infection lasts long enough to allow the body to build up its own defenses.

Finally, we come to the crux of the whole problem. Why, you ask, do you suggest that sulfathiazole will replace a drug that in smaller doses has a more rapid and efficient action? The answer is simply that at the present time, even with the larger doses used, sulfathiazole produces only rarely the distressing nausea and vomiting so commonly seen with the use of sulfapyridine. It is too early as yet to be able to compare the incidence of the more infrequent toxic reactions. However, one form, acute hemolytic anemia, has not been seen at all to my knowledge. Toxic dermatitis has been reported more frequently with sulfathiazole than with sulfapyridine, and is seen in about 6 to 10 per cent of cases. It has taken a different form in the majority of cases from the diffuse toxic erythema seen with sulfanilamide and sulfapyridine. The sulfathiazole rash is apt to be bilaterally symmetrical on the extensor surfaces of the hands, arms,

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2. Flippin, H. F., Schwartz, L. and Rose, S. B., in Ann. Int. Med. 13:2038, May, 1940.
3. Sadusk, J. F., Jr., Blake, F. G., Seymour, A., in Yale J. Biol. and M. 12:681, July, 1940.
4. Spink, W. W., and Hansen, A. E., in J. A. M. A., 115: 840, September 7, 1940.
5. Pepper, D. S. and Ham, George C., in Am. J. M. Sc. (in press).
6. Kneeland, Y. Jr. and Mulliken, B., in J. Clin. Invest. 19:735, September, 1940.

and legs. It resembles very closely the slightly raised, dusky red, somewhat indurated or edematous round or oval lesions of erythema nodosum. An additional type of toxic reaction—namely, conjunctivitis—has been reported by Haviland and Long(7). Drug fever and, rarely, joint pains have also been reported in about the same percentage of cases as with sulfapyridine.

Because of the benzene ring in the chemical formula of both drugs, the incidence of agranulocytosis will probably be approximately the same. With sulfathiazole, as with sulfapyridine, it will probably be seen more frequently in conditions other than pneumonia requiring longer courses of therapy.

One would expect that the renal complications would occur less frequently with the use of sulfathiazole than with sulfapyridine. Sulfathiazole is about twice as soluble as sulfapyridine, and it appears to undergo much less conjugation in the human body to the relatively insoluble acetylated form. Animal experimentation showed that sulfapyridine was more apt to cause this dangerous complication. Clinical results, however, have shown an incidence of serious renal complications with sulfathiazole that is perhaps slightly higher than with sulfapyridine. The type of reaction has been the same—the production of crystaluria, hematuria, oliguria and anuria. As in the experimental animal, the location of the crystalline masses in the renal pathways is different from that with sulfapyridine. Horack and I(8) have reported a case treated with sulfathiazole in which crystalline concretions of a derivative of sulfathiazole were found at autopsy in the collecting tubules of the kidneys.

In our discussion of this case we postulated that the site of development of the crystalline precipitates with sulfathiazole might be related to the observations of Reinhold *et al.*(9) that sulfathiazole is not reabsorbed so readily by the kidney tubules as is sulfapyridine. Thus the more rapid excretion, plus the higher concentration within the tubules, overcomes the lower rate of acetylation.

It is also to be noted that the site of obstruction to the flow of urine resulting from sulfathiazole concretions makes overcoming the obstruction by ureteral catheterization impossible.

Summary

I have reviewed the relative merits of sulfapyridine and sulfathiazole in the treatment of pneumococcic pneumonia. I think it is fair to say that aside from the marked reduction in the distressing but not dangerous nausea and vomiting seen so commonly with sulfapyridine, there is little to choose from between the two drugs.

Sulfathiazole is undoubtedly the drug of choice in staphylococcic infections and streptococcus fecalis urinary tract infections. It may be worth while to try it in infections due to the typhoid dysentery group of organisms.

Sulfapyridine should still be used in meningitis unless the infecting organism is the staphylococcus.

The most frequently seen dangerous toxic reaction with both drugs is the development of oliguria and anuria due to precipitation of the acetylated forms of the drugs within the urinary pathways. I believe that sufficient fluid intake—at least 2500 cc. of fluid a day (perhaps more at the onset)—together with accurate intake-output charts and daily urinalyses in the early days of treatment will prevent the majority of these reactions. The giving of alkalies in order to raise the pH of the urine is probably of more theoretical than practical value. We have found that in the physiological range of urinary pH the solubility of acetylated sulfathiazole varies but little.

There is little doubt which drug the practitioner will use. Too often, after a course of sulfapyridine, we have heard the patient say, "Please, Doc, if I ever get sick again, let me die. That medicine is worse than the disease."

The Development of Science.—So far as his physical and mental equipment are concerned, I see no evidence that man today is better than five thousand years ago. He does, however, have better tools—by tools I include the methods of science as well as the actual instruments, such as the microscope, which enable him to delve deeper into the unknown and learn the laws of nature. The development of science seems to act like a falling body in that, once started, its speed is enormously accelerated with time. There is an interrelation of science such that each new tool or method makes possible newer tools and further discoveries. In many branches, and perhaps in science as a whole, more progress has been made within the life span of a single man than in all time before. — Blakeslee, Albert F.: Science Five Thousand Years Hence, Science, 92:388 (November 1) 1940.

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7. Haviland, J. W. and Long, P. H., in Bull. Johns Hopkins Hosp., 66:313, May, 1940.
8. Pepper, D. S. and Horack, H. M., in Am. J. M. Sc. 199:674, May, 1940.
9. Reinhold, J. G., Flippin, H. F. and Schwartz, L., in Am. J. M. Sc., 199:380, 1940.

THE PHYSICIAN'S DUTIES UNDER THE SELECTIVE SERVICE ACT

LT. COL. JOHN H. STURGEON, M. C.

FORT BRAGG

The Selective Service Act has been made a law. Men of the age group designated by this act have been registered, and shortly the drawing to establish the order in which registrants will be called for duty will take place. As physicians, we are interested in the duties of the medical profession in the administration of this act. For the members of the Regular Army, National Guard and the Reserve Corps the question is already solved. They have but to follow orders. But what are the duties of other physicians? Mobilization will affect every one of us, some more directly than others. There is the problem of serving medical needs of communities whose only physicians have gone into active service, and of other communities where the medical service is only slightly less disrupted. These problems you know more about than I do, and you will solve them as they appear.

Present plans call for the training of 900,000 men in addition to the National Guard and the Regular Army. Such a program throws a heavy burden on the Army Medical Department, and that organization will require from 9,000 to 10,000 officers, and an enlisted personnel of 75,000 men. In addition, 1,070 Flight Surgeons and Medical Officers will be needed in aviation. These men require special training, and many of them even now are undergoing such training. The desired ratio of medical officers for administrative and professional service is six per thousand of combat troops.

There are at present in the Regular Army 1230 medical officers, and in addition, there are 500 Reserves on extended active duty. This leaves a total of 7000 to be procured during the fiscal year 1940-41. Today the Medical Reserve Corps totals 15,222. It may be readily seen that one-half of these will be needed.

In order to procure such a number of officers, the War Department will have to resort to the authority recently granted by Congress permitting the ordering of Reserve Officers to active duty without their consent. Prior to this authority, no Reserve Officer could be ordered to active duty in time of peace except with his consent. This new order will work a hardship in many cases. However, the Chief of Staff has directed the Medical Department to give every consideration to Reserve Officers, so that military duty can be deferred, in cases where it is desired, as far as possible.

Two rosters are being prepared. One comprises those officers who express a desire for deferment, and one, those who desire active duty. Questionnaires have been sent out, designed to obtain the individual's attitude toward serving and position and responsibilities in civil life. From these questionnaires the two rosters are being made up, and first selections will come from those requesting active duty. Only after this list is exhausted will men from the second list be ordered to duty.

It is the general opinion now that those physicians who come within the draft age limits and who are not in the Reserve Corps will be given commissions in the Reserves when drafted. Legislation to that end has been introduced into Congress, and although, as far as I can learn, no action has yet been taken, it is the feeling of the Medical Department that these doctors might better serve their year of active duty in their professional capacity than as fighting troops. It is estimated that there are 7500 doctors in this age group. Under the usually accepted percentages we would expect about 1000 of them to be drafted.

In addition to the physician called under his reserve commission and the doctor drafted under the Selective Service Act, there are those physicians who will serve as members of draft boards. These boards will classify all registrants in temporary classifications. The physician on such a board finds himself in a very responsible position. On him will rest two major responsibilities: first, to see that the service obtains the proper personnel; and second, to assure the registrant fair, just and impartial consideration. It is not an easy or enviable position, for he must hear the pleas of friends, neighbors and parents, be on the look-out to detect malingering, and verify disability certificates of fellow practitioners. In all, he must, with courage and honesty, examine all registrants with a view to obtaining for training men who are physically fit for the rigors of general military service.

Read before the Fifth District Medical Society, Fayetteville, October 24, 1940.

The physician not included in any of these classifications will not escape responsibilities. He will be importuned by former patients and friends for certificates, medical reports and recommendations. The pressure at times will be terrific; yet his duty requires the same type of courage and honesty already mentioned. If he will take this duty to heart and honestly and courageously perform it, he will be of the greatest assistance to all his fellow physicians more intimately connected with the Selective Service Act.

But let us return to the physician on the draft board. He will find, upon reporting for his duties, that information for his use and guidance is furnished in all necessary detail. Read it carefully. It is most important. It is necessarily lengthy, for it covers the whole field of the examination.

The draft boards will make the preliminary survey and classification of candidates. Doubtful cases can be referred by the medical officers on these boards to a special board of consulting physicians. This special board, after making the examination, will send its recommendation back to the medical officer requesting it. This recommendation is advisory only, and the physician on the draft board can act on it as he sees fit. If the registrant is not satisfied with the result of the examination of the draft board, he can appeal his case to this same board. In this case, the findings of the medical member of the draft board and those of the consulting board will both go to the board at the Induction Station for final decision.

The examination made by the preliminary board is of the utmost importance. It must be carefully and thoroughly performed, so that individuals unfit for service will not be accepted, only to be discharged in a short time on a certificate of disability. They must record all minor defects, whether disqualifying or not, in order to protect the Government in the event of future claims for disability compensation. This same matter of disability compensation must always be kept in mind when considering registrants with border-line or questionable defects. All facts should be recorded. As of today, directions are that only the physically fit are to be accepted. Later these directions may be changed, and for all those who in that event are accepted, but who have a physical condition requiring treatment, the nature of the condition and the need of treatment must both be clearly stated on the report of the physical examination.

At the time of the examination by the draft board, registrants will be classified into three groups. Class A-1 will be made up of those physically fit for general military service, no disqualifying defects having been found throughout the examination. Class B-1 will include those unfit for general active military service but fit for special or limited service. Class 4 will consist of those physically unfit for any military service.

It was thought that, because of the weight of public opinion against rejecting them, Class A-1 would also include men who were temporarily unfit but who could be made fit after periods of treatment up to three months—men with venereal disease, malaria, hookworm, secondary anemia, etc. But such is not the case at this time, and only those physically fit are to be placed in Class A-1. In Class B-1 those unfit for full service but fit for limited service will be included—for example, men with one blind eye, if the other eye is normal, or with slight deafness; men with hay fever not severe enough to prevent successful performance of civilian employment; and men with hernias, either inguinal, femoral, umbilical or postoperative. As I have previously stated, this class will not be called at this time but will be kept as a reserve roster of limited duty personnel. In Class 4 will go all who are physically unfit for even limited military duty, men with epilepsy, hemophilia, gonorrheal arthritis, peptic ulcer, thrombophlebitis, malignancy and equally serious disabilities.

When it appears to the examining physician that the registrant is suffering from self-inflicted or purposely caused physical defects which under the standards would exclude him from service, a full statement of the facts of the condition will be given, and the examining physician may recommend to the Director of Selective Service or other designated authority a waiver of the defects, so that the registrant may be compelled to render military service.

The detection and management of malingerers simulating medical diseases is important. It depends upon the absence of positive findings in an individual who presents the general characteristics of a malingerer. There is special need for thorough physical examination in this group. Some of the cardiac cases may at first appear to be malingering, and may later prove to be true cases of mitral stenosis or bacterial endocarditis. Similarly proper tests may show the presence of peptic ulcers in those suspected of feigning digestive abnormalities. The estimation of the genuineness of rheumatic pains is always a difficult matter.

Tachycardia and symptoms of thyrotoxicosis may be temporarily induced by the ingestion of drugs, such as thyroid extract. Egg albumin or sugar may be added to the urine. Undiluted canned milk may be made to simulate urethral discharge. Icterus may be simulated by taking picric acid. Crutches, spectacles, trusses, strappings, etc., may be used to create the appearance of disability.

The surest way to detect malingering is a thorough understanding of the type of people who actually do it and the way they behave. It is only in the feigned diseases of the eye and the ear that special tests are required. In the instructions for the examinations these tests are given in detail. Observation in a hospital may be required in some cases before the final decision can be made. The vast bulk of malingerers will be those who exaggerate some actual defect, and the examiner will have to decide whether the defect is sufficient cause for rejection. Persons of intelligence and education have more difficulty in deceiving, as they are bound to express themselves freely. If they are reticent in these matters, they arouse suspicion by their reticence. Those who talk freely may be counted on to say things at variance with the existence of the disease of which they complain.

The local selection or draft board will assemble and transport accepted men to the Induction Station. Here the final examination will be made and the man will be inducted into the service. This Induction Station at this time takes the place of the Recruiting Station in normal times. In each Corps Area it is contemplated that from nine to twelve of these induction stations will be established. Of course, the number of men handled by each station will vary to some extent, but every effort is being made to make the flow of men through these stations as even as possible. Two hundred men a day is considered the maximum for one station.

The personnel for the physical examination at such an Induction Station will consist of twelve medical officers and eighteen enlisted men, as follows: one officer in charge of the board, responsible for the medical property, the general supervision of the examination and final checking of the examination records; one orthopedist; one general surgeon; one clinical pathologist; two ophthalmologists; one otolaryngologist; one neuropsychiatrist (present regulations provide that in so far as practicable one neuropsychiatrist will be assigned for each fifty men examined daily); three internists; and one dentist. The enlisted men will include two non-commissioned officers, one stenographer, one typist, two laboratory technicians, eight clerks and four men as messengers and general duty men.

It is presumed that the board will work eight hours a day, examining twenty-five men per hour, one man being admitted to the board every two minutes. This will leave ten minutes at the end of each hour for further examination and discussion of difficult cases.

The examination will usually take the following order: 1. Laboratory examination of the urine. 2. Withdrawal of blood for determination of blood type. 3. Ear, nose and throat examination. 4. Height, weight and chest measurement. 5. Examination of feet, bones and joints. 6. General surgical examination. 7. Heart and lungs examination, (this examination will be done by three internists working in separate rooms on separate men). 8. The neuropsychiatric examination. The completed record will then be checked and requests will be made out for x-ray, for any special laboratory procedures —such as blood counts, urethral smears, malarial smears—or for special consultations.

At the conclusion of the examination men will, if accepted, be sent on to the Reception Center. If rejected they will be informed of the cause of the rejection and will be provided with transportation back to their homes.

During the mobilization set in motion by this act, a heterogeneous assortment of man power will be received by the army. To the activities connected with sorting and care of these men have been added, for convenience, other processes such as clothing, equipping, immunization and record making. This whole group of activities together are known by the term "reception". The centers where these processes take place are known as Reception Centers. Here the men will be kept until the process of reception is completed, and then they will be sent to the organizations, installations or replacement centers in which they are to serve.

In closing, let me repeat that no mean burden and responsibility has been placed on the medical profession by this emergency. American physicians have never failed in the past to meet such a call, and I am confident that they are willing and ready to do their part now in the administration of this Selective Service Act.

A REPORT ON THE TREND OF MENTAL DISEASE IN THE WESTERN STATE HOSPITAL DISTRICT OF NORTH CAROLINA

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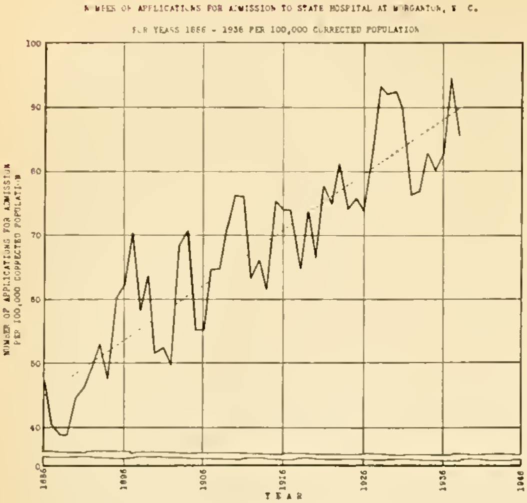
MORGANTON

The purpose in making the statistical investigation that led to the preparation of this paper was chiefly to help me find the answer to a question I was supposed to know. For thirty-odd years I have been asked my opinion as to whether mental diseases are on the increase. Often authors and statisticians give an answer very strongly in the affirmative. Is this true for North Carolina—or more specifically, for western North Carolina, from which these statistical figures are drawn? Owing to the increase in the population of the state, there is naturally a numerical increase in mental disease; but are these diseases increasing in proportion to the population in our district? The answer to this question has more than academic value. As physicians, we like to get scientific facts in medicine, and from a humanitarian point of view we would like to know if our race is deteriorating mentally faster than in former times. But on the answer depends also a very large economic question—the question of how much money we shall have to add to the already large sums spent for the care of the mentally sick in North Carolina. How fast shall we have to build? Will our building needs simply require us to keep step with the population, or shall we have to build faster than the population grows?

The figures given here deal only with the Western North Carolina Hospital District. To obviate as many chances for errors as possible only that part of our population from which our patients come is considered. The State Hospital at Morganton does not accept Negroes. Therefore only the white population was considered. Early youth furnishes very few mental cases. Therefore only those over 14 years of age were considered. There seems to be no upper limit. Recently we had an application for a woman whose age was authentically one hundred years. If we should base our figures on actual admissions alone, a grave error would enter, for only during a small part of the time has our hospital been able to take all applicants, owing to lack of room. For this reason our figures were based on applications for admission rather than actual admissions. From these applications, those without psychosis, the epileptics, and the purely feeble-minded were excluded. From the remaining applications two charts were prepared. The first considers the population as static, and it is based on the applications per 100,000 of population. It is on this chart that we shall seek the answer as to the essential increase of psychoses among our people. The second chart, which will be taken up later, plots the *actual* increase.

After this statistical research had been begun, the report of a similar, but much more extensive study of the Massachusetts figures for the years 1917 to 1933 was published by Dr. Neil A. Dayton in a book entitled "New Facts on Mental Disorders," which came off the press just a few months ago in 1940. This Massachusetts research was financed by the Laura Spelman Rockefeller Foundation and the Rockefeller Foundation. Any figures herein quoted for Massachusetts are from this report. In Massachusetts they seem to have taken the total population, presumably children and all, and they considered admissions rather than applications. I understand, however, that all worthy applicants are probably admitted in that state. The answer as to whether there is a relative increase of mental disease in Massachusetts is that it is increasing at the rate of one-fourth of one per cent a year, and Dr. Dayton says this picture is hardly one to bring shudders of apprehension.

The hospital was opened for the admission of patients in March, 1883. Conditions the first three years were so artificial—train loads of patients being sent in from Dix Hill—that it was deemed best to begin with 1886. That was fifty-four years ago. In 1886 there were 47.5 applications per 100,000 population. In 1887 the number dropped to 40.7. In 1937, just fifty years later, the number was 94, an increase of 131 per cent.



This looks like 2.6 per cent increase a year for North Carolina against ¼ of 1 per cent for Massachusetts. But the basis on which our 2.6 per cent increase is calculated was the number of applications fifty years ago; whereas, the basis for the Massachusetts figures was the much larger number of applications in 1917. The percentage increase would be cut nearly in half if we should take 1917 as a basis, as did Massachusetts.

Perhaps a better idea of the situation can be obtained by a further inspection of the chart, which is the basis for these deductions. We asked the Census Bureau for an approved method of estimating our population for each year between the published decennial statistics. On this chart we plotted the applications per 100,000, showing each year for this long period. The chart resulted in a consistently climbing broken line. To this chart there was fitted a long-term trend line, by the method of "least squares." The sum of the deviations from this line is 0 and the sum of the squares of the deviations from this line is less than the sum of the squares of the deviations of any other line. It so happens that in the period charted this long-term trend line is straight. If the nearly 54-year period is divided into three spans of 18 years each, using actual figures and not the trend line, the middle span is almost exactly the average between the first and last span. This would indicate that the rise tends to be uniform. Of course, no one can tell how long this rise will continue. According to that median line, there is an increase of 0.9 applications per 100,000 of our population each year. We must remember that this increase is in our static population. In 1950, ten years from now, there will be 9 more applications per 100,000 than there are now. To test out the gradual rise with actual figures again rather than by the median line, every possible span of four years—a gubernatorial administration—was applied. Of the thirteen such spans, only three were less than the previous span. They were then combined into all possible eight year spans and in no instance was any such span smaller than the previous one. This means that if one Governor's administration is considered there is a slight possibility that the trend may seem downward, but if two administrations are taken together the trend so far has always been up. Our smallest number of applications per 100,000 was in 1888 and the largest was in 1937.

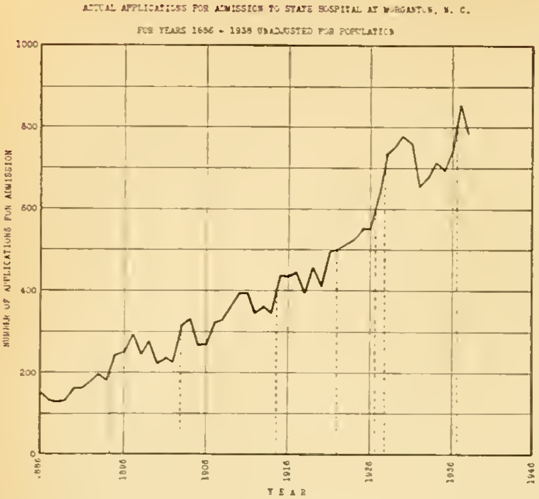
Is there significance in the fact that our long-trend line is constantly rising and is straight? Assuredly there is. It must be accounted for by some constantly acting force or forces, and not by something new and cataclysmic, for the latter would undoubtedly give a broken line. Is this rise due to an increase of syphilis in our population? Is it the result of the ever increasing effect of the modern fast pace? Is it uncertainty as to the future and as to one's livelihood? It is probably due to something else. Only about 9.5 per cent of the patients admitted to the State Hospital in 1939 were syphilitic. Of the whole population at the end of December, 1939, only 5.5 per cent was syphilitic. A blood Wassermann test is made on every admission. Our figures include those with a positive Wassermann and those with a negative Wassermann who have a clear history of having had syphilis.

As to the fast living pace, this probably came in with the automobile and good roads. Our chart does not show anything to indicate a new force just at that time. Now let us examine briefly the prosperity and panic records.

An interesting question might be raised as to whether the unstable part of our population is affected adversely by hard times and favorably by good times. Dr. Dayton seems to find such an effect in Massachusetts more marked in the border-line cases than in the frankly psychotic, but I fail to find that our population is greatly affected by these factors. Possibly North Carolina, having a large agricultural and rural population, was not quickly and proportionately affected by the prosperity or lack of it as represented by the great corporations of the country as a whole. In 1893-94 there was a panic. In the first year the applications jumped up 4 per 100,000, but in 1894 they were down 5. In 1896 there was a smaller panic, and the applications were up 1.3 per 100,000. In 1897, when the panic was practically over, they increased nearly 9. There was a panic in 1907 and the applications jumped 9.2. In 1908, while the panic was still on, they remained about the same, but in 1909, when prosperity returned, it climbed another 7.9. Our entrance into the World War, with all of its emotional shocks, did not cause an increase over 1916, the two years being almost identical. But in 1918, while the war was still on, there was a drop of nearly 9. A part of this drop can probably be accounted for by the large number of young men in the army. By 1919 the number had again climbed up to where it was in 1916-17. In 1920, the first year of prohibition, there was a drop of nearly 7. This marked drop was also noted in Massachusetts, and Dr. Dayton attributed it to the influence of prohibition. But in both North Carolina and Massachusetts by 1921 it had again begun to climb, our own figures showing an increase of nearly 11. Some of us will remember that by 1921 home-brewed substitutes had been found. The figure climbed rather rapidly until 1923, and then dropped somewhat. In the greatest of all our panics, that of 1929 and '30, there were almost exactly the same number of applications as for the supposedly prosperous year of 1928. In 1932, when our prosperity really scraped bottom, there were 6.6 fewer applications per 100,000 than for 1928. Our high water mark for all time was reached in 1937, a year which we have recently looked upon as fairly prosperous. On the whole, I think we can say that in North Carolina so-called prosperity and depression cycles of the nation affect our applications very little.

Is it not possible that much of this relative increase in the number of applications has been due to the gradual breaking down of the dread of a State Hospital? Is it not possible that the hospitals have become more attractive and that the stigma of having been in a State Hospital has grown less? But assuming that this more friendly attitude of our population towards the State Hospital does not account for all the increase in applications, and that there is an actual slight increase in mental diseases, cannot it be accounted for by the startling revelations in the Massachusetts findings? We think of youth as being the dangerous period for insanity. When our youth have gotten through the twenties with clear minds we sigh with relief. Undoubtedly, much of our mental disease originates in youth, but this is because there are so many young people. The Massachusetts figures show that a man of eighty to ninety is 19 times as likely to lose his mind as is a youth in his teens. From sixty years up is really the dangerous time, every decade becoming rapidly more dangerous. Not in a single decade from youth to old age does the liability decrease rather than increase. From fifty to sixty it is over 5 times as great as in the teens, and from forty to fifty it is 4.9 times as great. In other words, the older the average population the greater the incidence of mental disease. Quoting Lombard for Massachusetts (1933): "Two generations ago the average age at time of death of all individuals in Massachusetts was about 31 years. Today it is around 54, a gain of some 20 years." As this was being written, a brochure came through the mail from The National Physicians Committee for the extension of medical service which states that the life span of the average man is now 62 years.

The analysis of this first chart has attempted to answer the question of the medical man as a scientist and the humanitarian question of the philanthropist. Now we turn to a chart which concerns our pocket books. Up until now we have considered the population as static, but in reality North Carolina is a very rapidly growing state. This increase in the number of our people increases the demands on our State Hospitals. The next chart climbs much more rapidly. The average or median line of this chart does not follow a straight line as did the other, but presents a curve. The curve, unfortunately, does not show a tendency to straighten out and eventually become less, as would a circle, but the climb seems to be ever steeper. In 1886 there were about 150 applications for the year. We did not reach 200 applications a year until 1893. It stayed at about this level until sometime in 1894. Nine years later, or in 1903, we had reached 300 applications a year. A little over eleven years later, or in 1914, we had reached 400 a year. Eight years later, in 1922, we had reached



500. Four and a half years later, in 1926, we had reached 600. Strange to say, in one single year—1927—right in the midst of the Coolidge prosperity, we reached 700. In 1936 we reached 800, and this is about where we are today. Applications have increased from 150 to 800 a year in fifty-two years. Just how fast would our hospital population grow if we had plenty of room and took all applicants? The building up of the population depends on the excess of the inflow over the outgo. The inflow, with plenty of room, depends on the incidence of the development of mental disease. The outgo depends on deaths and releases by the hospital authorities. The attitude now is not to keep patients unduly long—for economic reasons and also for fear that an unnecessarily prolonged hospital stay might institutionalize and weaken the patient for outside existence. A few years ago we had an opportunity to test out the growth of the Hospital if unhindered. For two consecutive years we had sufficient room to take all worthy cases. The first year the population increased 150 and the second year 144. Two years hardly furnish sufficient data to establish a rule, but at this rate the hospital would just about double itself in fifteen years.

The evidence, then, is that we must keep building, and, for a time possibly, at an accelerating rate. Before many years we must decide whether we shall add to our three hospitals and carry them above what many consider the ideal population point of 2,500, or whether we shall start new ones that are more accessible to the people.

The Interpretation of Electrocardiographic Findings. — The employment of electrocardiography in medicine is constantly increasing and it behooves those who use this method of diagnosis to have a thorough understanding of its application or to discontinue its use. I am led to believe, through recurrent experience with the medical novice, that he actually believes that he is possessed with an instrument which by manipulation of a few dials, infallibly records the answers to all his cardiac problems. This obviously is not the case, and the safe use of electrocardiography belongs only to those who have labored diligently and earnestly thoroughly to understand its usefulness as well as its limitations in the ever changing application from patient to patient.

I am astounded repeatedly when electrocardiograms are submitted to me by physicians, or brought to me by patients to note the record of the abnormalities observed and then to observe the addendum "these findings suggest or indicate the presence of myocardial disease, or myocardial weakness, or mitral stenosis, or coronary disease, etc., etc." The electrocardiographic record must bear only what the physician observes in the record. The clinical diagnosis has no place except on the patient's clinical record and then only after all diagnostic correlations are intelligently made and the physician has based his opinion on all evidence, and not on one isolated parcel of laboratory evidence which may lead him into serious error. The practice of the so-called electrocardiographer who exposes himself to the ridiculous position of making an electrocardiogram on a patient for a colleague when he has not examined the patient thoroughly and then is willing to hazard a clinical diagnosis on the graphic inscription alone is not only contrary to all the fundamentals of scientific medicine, but is a blatant admission of his limited knowledge of electrocardiography. This practice continues to be of daily occurrence and can imply only two alternatives, either that physicians do not understand what the electrocardiogram is capable of revealing, or that the method offers a ready and not laborious method of financial remuneration.

When an experienced cardiologist reviews his experience with electrocardiography, it is not difficult to recall innumerable instances in which the clinical examination has revealed the existence of fatal heart disease and the electrocardiogram has been essentially normal. By the same token, definite abnormalities in the graph may be subject to various interpretations when all other evidence is considered seriously. There are occasions, of course, when the electrocardiogram appears to present irrevocable evidence of specific disease, but even then, the mature and experienced physician demands clinical evidence before committing himself to a definite opinion.

In spite of the medical profession's cherished hope of finding in electrocardiography a method of precision which, through technical manipulation, will pour forth the correct answer, it must be acknowledged that this is not the case. The electrocardiogram must be considered as a valuable diagnostic adjunct, valuable only when intelligently and judiciously correlated with the clinical history of the patient together with the physical findings, physiologic alterations and other diagnostic aids that are available. Until this philosophy is adopted and practiced, universally, this important diagnostic aid will be unjustly discredited and held under unwarranted suspicion by the medical profession at large.—Willius, F. A.: A Talk on the Interpretation of Electrocardiographic Findings, Proc. Staff Meet., Mayo Clinic, 15:143 (Feb. 28) 1940.

POLICIES AND NEEDS OF THE STATE HOSPITAL AT MORGANTON

R. H. Long, M.D., *Asst. Superintendent*
AND
W. E. Brown, M.D., *Asst. Physician*

State Hospital

Morganton

It is the earnest desire of the staff of the State Hospital at Morganton that a closer bond be established between the profession as a whole and those of us interested chiefly in the field of mental disease. The purpose of this paper is to inform the practitioners of the state about the work we are trying to do in the State Hospital—the routine procedures of examination followed on each new admission and the treatment employed—, and to present to the profession the needs of the hospital. For the sake of convenience the patient will be referred to in this paper as a female patient, but it should be kept in mind that exactly the same procedure is followed regardless of sex.

Routine Procedure Followed on Admission

Until the fire-proofing program got under way patients were always admitted in the doctor's office on the second floor. This necessitated bringing them up the front steps at the entrance and to the second floor of the Administration Building, and when the patient was resisting, violent and fighting this was a source of much humiliation to the relatives of patients who accompanied them to the hospital. This will all be changed when reconstruction is completed and patients will be admitted in privacy in the rear of the Main Building. On both the male and female sides a suite of rooms known as the Receiving Offices has been set aside for this purpose. This suite consists of a receiving office, an adjoining bath, which opens into a bedroom, and a private office for the examination of patients. We feel that this privacy at the time of admission will relieve not only the patient but the family of some embarrassment.

On admission the patient with her family is met in the Receiving Office by the receiving clerk, the receiving nurse, and the doctor who happens to be on duty at that particular time. When the patient has told her family good-bye she is taken by the receiving nurse and given a complete bath. She is then put to bed in the adjoining bedroom to await the visit of the doctor. During this time the receiving clerk is obtaining the statistical data which is required of all State Hospitals by The National Committee for Mental Hygiene, and the doctor is securing a brief history from the family concerning the mode of onset, symptoms, etc. When this is completed the family leaves and the doctor visits the patient in the adjoining room and makes a preliminary examination to determine in a general way the physical condition of the patient. The skin is examined thoroughly for bruises, eruptions, etc., and the extremities examined particularly for fractures. It may be noted here that many cases of scabies and pediculosis, which require isolation, are discovered on admission, and fractures of the long bones which were unknown to the relatives have also been discovered. Recently a male patient was admitted suffering from marked loss of blood resulting from a severe cut in the region of the femoral artery. This patient had hidden a razor blade in his pants pocket and had inflicted this wound while sitting next to an officer in the car bringing him to the hospital. The patient's temperature is taken and unless there are indications for isolation, she is transferred to the receiving ward, where, if her conduct permits, she remains until after presentation at staff meeting.

As soon as practicable after admission the patient is given a thorough mental and physical examination. This includes careful examination for evidence of nervous system involvement, as well as a compete check-up otherwise. The details of the mental examination will not be discussed, but it might be stated that this process is similar in most respects to the examinations given in other institutions of this kind.

The day after admission a complete blood count is made. A morning specimen of urine is examined the day following admission. In addition to the usual chemical and microscopic examination the urine is examined for acetone and diacetic acid. If sugar is discovered in the urine an estimation of blood sugar is made. Blood is sent to the State Laboratory of Hygiene twice weekly for Wassermann tests on all patients admitted in that time. The blood is also tested

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Read before the Catawba Valley Medical Society, State Hospital, Morganton, May 18, 1940.

for bromide concentration; and it may interest you to know that in a recent series of 500 consecutive cases, 17.8 per cent showed a concentration above the normal limit of 75 mg. per 100 cc. However, toxic symptoms do not appear until the concentration reaches 150 mg. per 100 cc., except in highly sensitive patients. All patients under sixty years of age are given typhoid inoculation and vaccinated for smallpox. Sputum examinations and x-rays of the chest are made on all suspicious cases.

In addition to these routine measures, the laboratory is equipped to do gastric analyses and kidney function tests when indicated, and we hope in the near future to begin doing more blood chemistry. Basal metabolism tests are made on all cases where glandular disturbance is suspected. We have a hyperpyrexator for the artificial production of fever and have obtained good results with fever therapy in the treatment of gonorrhea in women. However, it does not seem to be so effective as the malarial treatment in paresis. Within the first few days of admission, if the patient is sufficiently cooperative, she is given a complete dental checkup by the resident dentist.

When a positive Wassermann report on a patient's blood is received from the State Laboratory a specimen of spinal fluid is obtained immediately. Part of this is sent to the State Laboratory for a Wassermann test, and part is retained in our own laboratory. On this a cell count, a test for globulin, and a colloidal gold test are made.

When all of these examinations have been made and laboratory reports have been received the doctor records his findings and the patient is presented to the entire staff for diagnosis and suggestions as to treatment. Patients are all classified after this information has been obtained solely according to their conduct. In an institution of this size it is necessary to keep disturbed cases together. With additional room we will be able to provide group classification more satisfactorily than we have ever been able to do before.

We are constantly increasing our efforts to build up closer contact with the Welfare Department in each county so that we may secure reliable information concerning the patient and her environmental difficulties before admission and may have a reliable follow-up agency to help us in advising the family as to continued treatment and in probating and discharging patients.

A new hospital building of eighty beds has been constructed to take care of all cases of acute physical illness. This building is of fire-proof construction and is designed to afford facilities for most modern treatment. Eventually we hope to move our operating room equipment to this building, and to secure modern diagnostic and therapeutic aids which will provide a hospital unit for physical illnesses second to none.

By appointment of the Governor we have a consulting staff of outstanding specialists in every branch of medicine at our disposal. These men have given most liberally of their time and talents. It is our plan, when this reconstruction program is completed, to organize these groups in such a way that the work will not be a hardship on anyone and so that at the same time a more adequate and specialized supervision will be provided. Although this hospital is not primarily a general or surgical hospital and although relatively few cases of mental illness result from a diseased body, we feel that much more can be done for a sick mind if the patient has sound physical health. It is our hope to provide even more adequate facilities whereby physical defects can be studied and treated.

Treatment

The time honored methods of treating the mentally sick by hydrotherapy, psychotherapy, and occupational therapy are all practiced extensively in this hospital. Wet packs are often all that is necessary to quiet excited cases. Continuous baths are also used for the same purpose, and we hope soon to have our hydrotherapy department reconditioned and to lay more emphasis on this phase of the work.

Nothing is more helpful to the sick mind than to force new thoughts and ideas into the consciousness, and any kind of work, whether it be farming, raking leaves, stringing beans and peeling potatoes, or making baskets and brooms, serves the same purpose.

Next in importance, or perhaps of even greater importance than occupational therapy, are amusements. These serve the same purpose as occupational therapy in forcing new thoughts and interests into the minds of the mentally afflicted, and we are happy to report an ambitious program for providing these is under way. We have money set aside for the purchase of a moving picture machine, and as soon as we can remove the patients from the amusement hall this will be provided. For the past two years during this building program it has been necessary to use all available space to house patients in order to vacate the Main Building for fireproofing, and we have been forced to use the amusement hall for this purpose. Weekly dances will be resumed, and these are always thoroughly enjoyed. Already some of the porches have been painted for shuffle board, and we have under construction courts for volley ball, tennis and soft ball. Croquet is played almost daily by the better adjusted class of patients. We hope to set aside a small plot of ground for the women to use in gardening on a small scale. The women patients are encouraged to do fancy needlework, and this is thoroughly enjoyed. All wards are supplied with playing cards, and many patients enjoy checkers. An old outbuilding is being converted into a small wood-working shop, where much constructive work can be done under proper supervision, affording not only interest and diversion for the patients but also pecuniary return for the hospital. Here chairs and furniture will be repaired, painting done, cabinets built, etc. Chapel services are held each Sunday afternoon by the different ministers of the town, and this is a feature eagerly anticipated by most of our patients. Reading material is provided by the circles of the various churches in town and by individuals. Within a few weeks we hope to have a well organized library in operation. This has been made possible by the splendid cooperation of the Morganton City Library, which will supply us with circulating books, and by individual contributions of books from other friends of the hospital. A well rounded program of work and play is planned to emphasize to the patient that a genuine interest is taken in his comfort and welfare.

Very often domestic and environmental difficulties serve as exciting causes of mental breakdowns, especially in individuals with unstable personalities, and removing them from such an irritating environment acts in a beneficial manner. It is in this phase of the work that the family doctor by advising and assisting in untangling such domestic difficulties can be of greatest usefulness.

Within recent years an entirely new concept of the treatment of mental illness has captured the attention of the general public as well as the profession at large—namely, the so-called "shock treatment," using insulin and metrazol and other less commonly known drugs. Extravagant claims have been made concerning results obtained by this form of therapy. Within recent months these claims have been moderated to some extent, although it is almost generally accepted that better results are obtained with than without the treatment in selected cases. We have used both forms of therapy, observing about the same results in each, but for some time have concentrated on the metrazol method because of the ease of administration, which permits its use in a larger volume of cases. Several reports have been made on its use in this hospital, and a discussion of its advantages and disadvantages will not be made in this paper.

A survey would probably show a greater incidence of physical disease among the mentally ill, if pediatrics and obstetrics were excluded, than among the general population and just as much nursing and professional care is required. A sincere effort is made to keep abreast of modern treatment not only in the psychiatric field, but also in the field of general medicine. For many years we have used malarial therapy in paresis and have made reports on its use. Our results with glandular therapy in the depressed patients and involutional cases have not been particularly good, but this may be due to the fact that so many of these cases are far advanced by the time they are admitted here.

Needs

Our Superintendent has asked that a few words be added to this paper with respect to some of the needs of the hospital, particularly from the professional standpoint. The last General Assembly appropriated funds for an increase in the medical staff, long urgently needed, if we are going to provide even custodial care. This has lightened the patient load on each doctor, and much better work is being done, but we are still carrying double the load recommended by the American Psychiatric Association. The most urgent need now is in the nursing and attendant force, which is dangerously small. With the program for treatment which we have indicated in this paper—and we should be satisfied with nothing less—, it is imperative that the nursing force be increased. In some private institutions the ratio of employees to patients is approximately 1:1, whereas here we have about 250 employees to 2400 patients, or approximately 1:10. In a neighboring state, far less able economically to provide for its mentally diseased citizens, the State Hospital has a total employee to patient ratio of 1:5.6 as compared to our 1:10, and a nursing and attendant ratio of 1:9.8 as compared to our 1:14.2. If we analyze this a little more closely and divide our nursing force, two-thirds for day duty and one-third for night work, we find that each nurse must provide all nursing care for approximately 25 patients. With large numbers off duty each afternoon, as provided by law, the load is still further increased to 30-35 patients. The total annual per capita cost for maintenance in that hospital is $266.70, as compared with our $177.-24, and it stands at the forefront of psychiatric medicine. In a recent publication a Western state reported with great pride the operation of a model prison for criminals, forty of whom were murderers, at an annual per capita cost of $500.00. Surely the criminal, legally responsible for his acts, is not entitled to more consideration than the mentally afflicted patient, who is in no wise responsible for his condition. Should not a diseased mind be placed in the same medical category and receive the same attention and care as a diseased lung or heart or appendix? It may be true that all can not be cured, but many can be helped so that they may resume their former station in life and be self-supporting, if adequate treatment is instituted early in the progress of the disease.

It is the ambition and intention of this administration to make this a hospital in fact as well as in name, and we sincerely ask for the continued interest and support of the medical profession in educating the general public concerning our work and the plans outlined for expansion in therapeutic measures. In order to accomplish these things more generous appropriations must be made. This should not be considered simply as increased expenditure, because we feel that with better and more modern treatment the hospitalization period in hundreds of cases will be materially shortened and the individual patient will be rendered self-supporting much sooner, so that the state will stand to gain economically. At the same time adequate treatment will be provided for many more of the mentally ill at an early stage of the illness. The earlier treatment is instituted, the more hope is there for recovery or readjustment. We earnestly seek your support in removing from the public mind the age-old concept of the "Insane Asylum", and in teaching them to think of it as a hospital where cures and adjustments may be made.

BRONCHOSCOPY IN BRONCHOPULMONARY DISEASES

M. D. Bonner, M.D., *Superintendent*
Guilford County Sanatorium

Jamestown

The bronchoscope bears the same relationship to bronchopulmonary disease as the cystoscope bears to urinary tract disease, the speculum to genital disease, and the proctoscope to rectal disease. The cystoscopist, gynecologist, or the bronchoscopist will gain about the same amount of information from their respective endoscopes, for as stated by Dr. Jackson, a specular examination anywhere may reveal:

1. Negative findings.
2. A condition amenable to treatment through the speculum.
3. A lesion that should be treated by radiation or physical therapy.
4. A condition that should be dealt with by external surgery.

Practically the same diagnostic procedures which are employed in urology are available for diseases of the chest. These diagnostic procedures have been available for a long time, but we have not taken advantage of them as the urologist has of his diagnostic aids. I believe the major reason for this is the fact that this specialty has been too much divided until recently. The urologist from the beginning has done his own cystoscopies. He, better than anyone else, appreciates the usefulness of the procedure. As a consequence many cystocopies are performed, and medical men, and even the patients themselves have learned to expect in any thorough urological examination a cystoscopic study. Isn't it safe to assume that since over 98 per cent of bronchoscopic work is directly concerned with bronchopulmonary disease, that all chest men and chest clinics will be

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Read before the Section on the Practice of Medicine, Medical Society of the State of North Carolina, Pinehurst, May 14, 1940.

equipped to use the bronchoscope, when necessary, in chest examinations? When this time comes, bronchoscopy will be as common as cystoscopy; and when the knowledge of the indication for bronchoscopy becomes general, referring physicians and the patients themselves will demand it. Laryngoscopy will naturally remain in the hands of the nose and throat men, and esophagoscopy and gastroscopy in the hands of the well trained gastro-enterologist.

The indications for bronchoscopy are listed in detail in Jackson's textbook as follows:

1. Bronchiectasis.
2. Any form of bronchial obstruction.
3. Acute abscess (especially post-tonsillectomic or post-anesthetic.)
4. Chronic abscess.
5. Asthma.
6. Wheezing sounds heard at the open mouth.
7. Post-operative atelectasis (so called massive collapse).
8. Unexplained dyspnea.
9. Dyspnea unrelieved by tracheotomy calls for bronchoscopic search for deeper obstruction.
10. Bronchial or tracheal obstruction as indicated by physical or x-ray signs, or by obstructive emphysema, or obstructive atelectasis, or by the asthmatoid wheeze.
11. Any obscure thoracic disease.
12. Unexplained hemoptysis.
13. Unexplained cough.
14. Unexplained expectoration of pus, fibrous cast, etc.
15. Question as to the source of spirochetes, fungi, or other organisms in the expectorated sputum.
16. Conditions requiring selective bronchography as an aid to x-ray diagnosis.

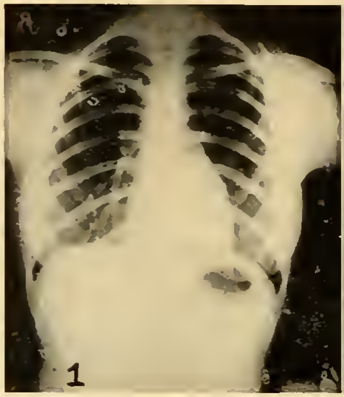
These may be divided into indications for diagnostic and indications for therapeutic bronchoscopy. The diagnostic indications are produced by disturbances in the lower respiratory tract—i. e., the trachea, bronchi, and lungs—which manifest themselves by the symptoms of cough, expectoration, hemoptysis, wheezing, dyspnea, and chest pains; and by signs of dullness, rales, and wheezing; by x-ray evidence of atelectasis, infiltration, cavitation, and unusual shadows in the mediastinum and root of the lung. Any of these symptoms or signs are sufficient indication for diagnostic bronchoscopy when they are not adequately and accurately explained by the usual diagnostic procedures. Therapeutic bronchoscopy is more or less confined to obstructive and ulcerated lesions of the trachea and bronchi.

Time does not permit me to discuss in detail all the conditions that may produce these indications; however, I will discuss briefly some of the most common with which I have had personal experience.

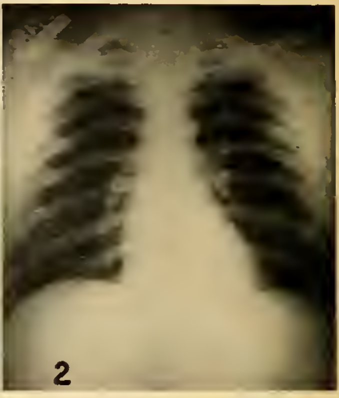
1. *Bronchiectasis:* Any case of proven bronchiectasis is sufficient indication for at least one look to rule out certain known etiological causes, such as foreign bodies, cicatricial bronchial stenosis, or endobronchial neoplasm. This is especially true in unilateral disease. Aspiration as a therapeutic agent may prove helpful and should be used if proper drainage cannot be established by ordinary methods. But I see absolutely no reason for repeated bronchoscopic aspirations in those patients that can empty their bronchi by cough and postural drainage; and unless obstruction is present most of these patients can drain their lungs if we can tell them the exact location of the abscess, and instruct them as to the proper position for postural drainage. A good bronchogram (with iodized oil) is the only accurate method we have for obtaining this information.

2. *Lung Abscess:* If this is caused by a foreign body, it usually clears up after the foreign body is removed. Other acute lung abscesses can be helped very little by bronchoscopy unless better drainage can be established by removing obstructing granulation tissue, inspissated secretion, etc., and by dilating a narrowed draining bronchus. Unless these things can be done it is useless to continue doing aspirations. A diagnostic bronchoscopy is indicated in acute abscesses, however, to rule out bronchial obstructions. At the same time we can determine the exact bronchus from which the pus is coming, and thereby state with assurance, in most cases, which region of the lung is involved. This information is invaluable to the surgeon; for the proper approach in external drainage will often mean the difference between life and death. External drainage in competent hands is so far superior to other forms of treatment that it should be the operation of choice. Thirty-five per cent of lung abscesses heal spontaneously (Wessler). Yankauer and Kramer reported an additional 17 per cent with bronchoscopic drainage. As high as 95 per cent cures from thoraco-

tomy have been reported. There should be no such thing as a chronic lung abscess, and so far as I know there is no treatment other than compete removal of the diseased area that is anything more than palliative. Most of these patients die in a few years without operation. If the acute cases are referred to the thoracic surgeon early, and if bronchoscopy is used as an aid in diagnosis and localization, most chronic abscesses will be prevented.



Case 1



Case 2

3. *Recurring pneumonias*, especially if the same portion of the lung is involved, should be investigated by the bronchoscope. Bronchial lesions, more often than not, will be found.

4. Any form of *bronchial obstruction*—whether due to tenacious secretion, benign neoplasm, polypi, or any of the numerous causes—can be treated rationally in only one way, and this is by bronchoscopic removal.

Nature's method of keeping the airways open is by: (1) cough: (2) squeezing power of the lungs and bronchi: (3) the ciliary action in the bronchi. This is not sufficient except in very rare instances to remove anything other than secretion, and nature has one alternative: an attempt to liquefy the obstruction. This is done by bacterial action exactly as in the ordinary septic tank. The bronchial walls and lung tissue are liquefied as readily as is the obstruction; and finally, if the obstruction can be liquefied, it is coughed up, leaving behind an extensive bronchiectasis, possibly chronic inflammation, and fibrosis of the parenchyma of the lung.

5. *Wheezing sounds* heard at the open mouth often indicate bronchial obstruction and should be investigated.

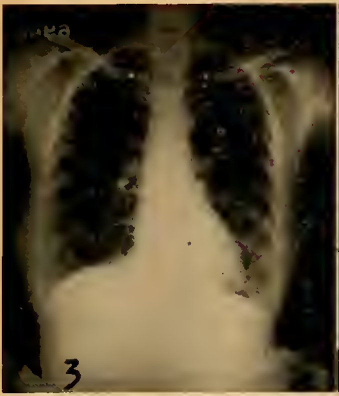
6. *Dyspnea*, especially in children, is often due to some form of obstruction; and if it is not explained by physical and x-ray examinations, bronchoscopy should be done. If tracheotomy does not relieve dyspnea, it is quite evident that the obstruction is below the larynx.

7. Any *obscure thoracic disease* should have the benefit of a bronchoscopic examination. The diagnosis can often be made in this way when we have been at a loss to explain the condition on clinical, physical, and x-ray findings.

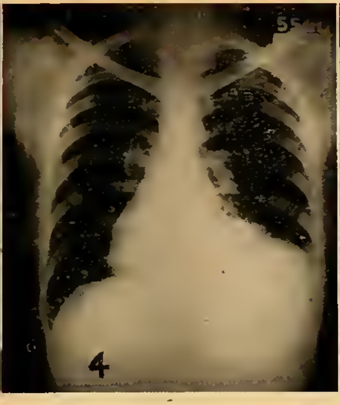
8. *Unexplained hemoptysis* is not uncommon. Of course, the cause is usually evident upon physical and x-ray examination, but there are many cases that show nothing. I have bronchoscoped many of these and found granulation tissue, or an ulcer in the bronchus which was unquestionably the cause of the hemoptysis. A bronchial lesion will often be found when everything else is negative in male patients complaining of blood streaked sputum or repeated small hemorrhages. There are many conditions in the tracheobronchial tree that can produce a most harassing cough, and can be detected only by use of the bronchoscope, but I cannot attempt to discuss them here. Suffice it to say that any persistent cough that cannot be explained by physical or complete x-ray examination should be studied bronchoscopically.

9. Bronchoscopy in *tuberculosis* has a limited usefulness. It is of value therapeutically in removing obstructing granulation tissue and thick purulent material from the bronchi, especially from around old strictured areas. The strictures themselves are usually best left alone.

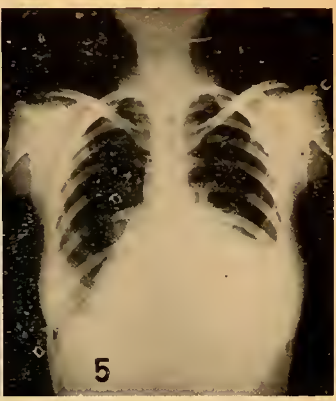
I think that the value of local treatment of tuberculous ulceration of the trachea and bronchi is quite doubtful, in spite of the glowing reports of its effectiveness by numerous authors. I think the outcome of these lesions depends almost entirely on the type of pathology—i. e., whether caseous, productive, or fibrotic—and on whether the pulmonary disease is controlled.



Case 3



Case 4



Case 5

Bronchoscopy, in the future, may have a usefulness in blocking or stenosing a lobe bronchus in selected cases. Diagnostic bronchoscopy is often of value in finding the source of positive sputum when other methods fail, and is indicated when signs and symptoms of bronchial obstruction are present.

The following case reports illustrate the use of the bronchoscope in various conditions.

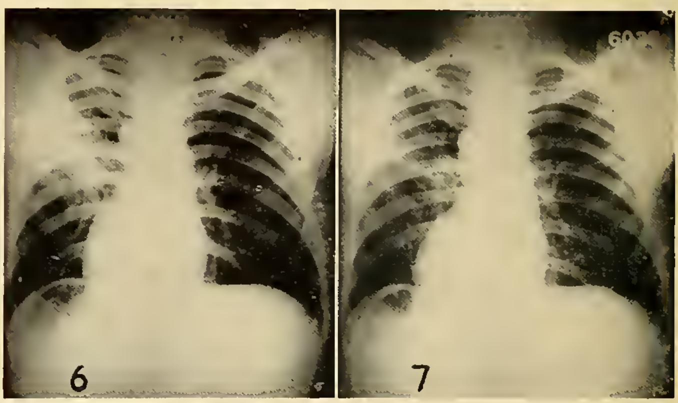
Case 1. Miss D. C., aged sixteen, gave a history of having violent paroxysms of cough, especially at night, which were not affected by usual drugs. Her x-ray films were perfectly normal. Bronchoscopy showed an acute inflammation of the bronchial mucous membrane around the spurs of the left lower lobe bronchi. Smears gave an almost pure culture of streptococci. A short course of sulfanilamide relieved all symptoms.

Case 2. Mr. N. F. B., aged forty, complained of a persistent hacking cough of six years' duration. He had occasional pains, and almost constant tenderness just to the left of the sternum at about the third costal cartilage. Frequent chest examinations in numerous clinics had failed to show any pulmonary pathology. The x-ray film (fig. 2) is perfectly normal. On bronchoscopic examination an ulceration of the main stem bronchus on the left was found, and when this was touched with the instrument it gave the patient the same pain that he had been experiencing for years. This ulcer was treated with silver nitrate and deep x-ray therapy, and has remained healed for the last three years.

Case 3. Mr. C. G., aged sixty-one, gave a history of an occasional small hemoptysis and frequent blood streaked sputum. X-ray examination showed the lung to be essentially clear except for a large calcified gland in the left hilum. Bronchoscopy revealed an ulcer in the left bronchus, corresponding to the position of this calcified gland. This was treated with 20 per cent silver nitrate and was healed, but blood streaked sputum has since recurred. No bronchoscopy has been done to determine if this bleeding was from this same ulcerated area.

Case 4. Mrs. R. M. M., aged twenty-four, was admitted with a history of continuous and persistent heavily blood streaked sputum, and frequent large pulmonary hemorrhages over a period of three months. The patient was markedly emaciated, anemic, and had a most harassing cough. Two transfusions of whole blood were given before bronchoscopy, at which time a mass of granulation tissue was found to be obstructing the lower lobe bronchus. This was removed with biopsy forceps and cauterized with 20 per cent silver nitrate. The cough and bleeding ceased almost immediately, and the patient gained 25 pounds in one month. Later bronchoscopy showed a partial stricture of the lower lobe bronchus. This patient died of brain abscess three months after discharge, ten days after a tonsillectomy.

Case 5. Miss M. S., aged forty-three, had had frequent attacks of pneumonia in the right side, almost continuous hacking cough and occasional blood streaked sputum. Bronchoscopy revealed a large ulcerated lesion just below the bifurcation of the right upper lobe. This was treated with 20 per cent silver nitrate. Two days following the last treatment the above film was made (fig. 5),



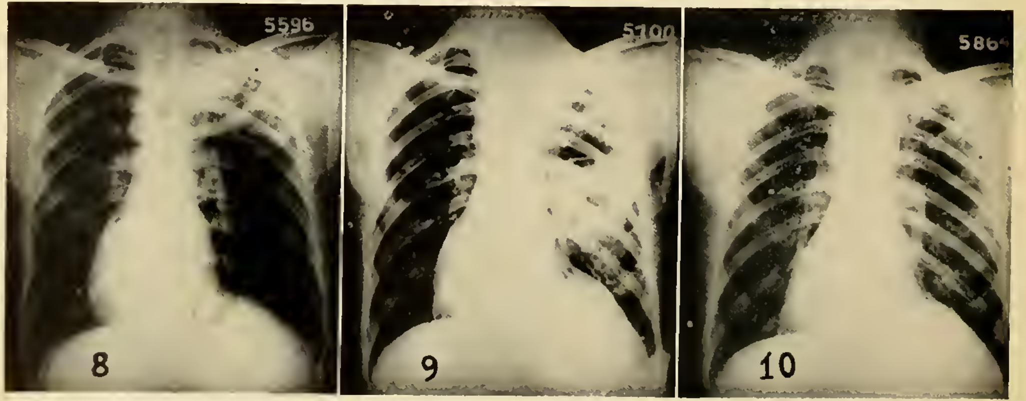
Case 6

which was interpreted as atelectasis of the lower lobe. This cleared in three days. Deep x-ray therapy was given over the ulcerated areas with complete healing; however, partial stricture of the bronchus resulted.

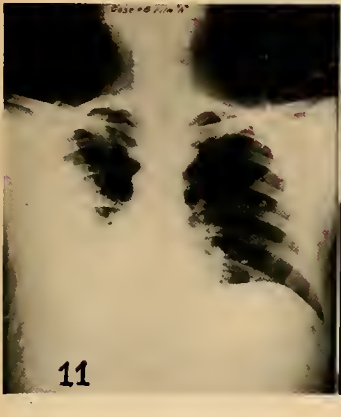
Case 6. A. W., a colored male, forty-three years old, gave a history of recent loss of weight, night sweats, slightly productive cough, hemoptysis, and pleurisy in the left chest. Figure 6 shows a hazy homogeneous density in the left upper lobe, which was thought to be an exudative tuberculosis. Repeated sputum examinations were negative for tubercle bacilli. A tuberculin test with 1:1000 dilution of old tuberculin (Mantoux) was negative. A culture on Saboraud medium of a small amount of material aspirated from the left upper lobe showed a fairly heavy growth of Penicillium. After determining the patient's sensitivity large doses of potassium iodide were given, with almost complete clearing in three weeks (fig. 7).

Case 7. Mr. C. F. R., aged forty-seven, gave a history of a weight loss of twenty-four pounds in five months, gradually increasing fatigue, and a slightly productive cough. Four weeks before admission, when he was working in a dusty atmosphere, his cough and expectoration became much worse; he developed a temperature of 102°, and was confined to bed for one week. Figure 8 shows a heavy mottled density in the right upper lobe, with small cavities at the second rib in front, which was interpreted as tuberculosis. One week later, on his admission to the Sanatorium, another film (fig. 9) was made, which shows marked spread of the lesion, now a large cavity in the midzone. Large amounts of foul-smelling sputum were raised; no tubercle bacilli were found. Bronchoscopic examination failed to reveal any obstruction; considerable secretion was aspirated, and a specimen taken directly from the bronchus showed an almost pure culture of hemolytic staphyloccoccus. Small doses of neoarsphenamine and staphylococcus toxoid were given, with complete clearing in about one month (fig. 10).

Case 8. Mr. R. C., aged thirty, had a long history of productive cough, with three attacks of pneumonia in the left side in the last six years. Bronchoscopy revealed a large quantity of tenacious sputum in the left bronchial tree. Repeated bronchoscopies



Case 7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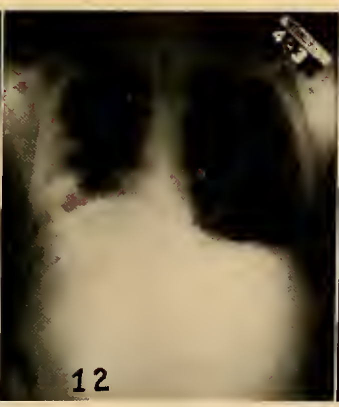
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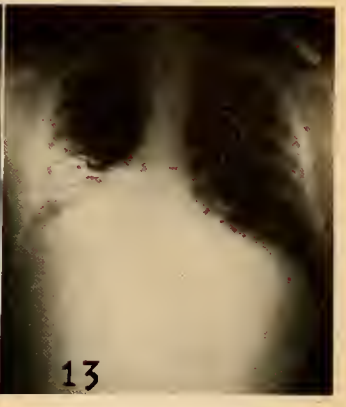
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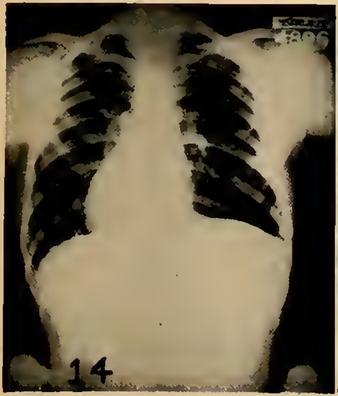
Case 8

plus postural drainage over a period of two months showed marked clearing of the lesion which was noted in figure 11. Figure 12, a film taken one month later, shows an extensive bronchiectasis in the left lower lobe.

Case 9. P. N., fifteen year old white male, complained of a cough productive of three or four ounces of thick purulent sputum each day for three weeks. X-ray examination (fig. 14) was essentially negative; however, a slight exaggeration of the lung markings at the left base made one suspect that the sputum was coming from this region. A left sided bronchogram (fig. 15) shows two small bronchiectatic areas in the lower lobe, but not enough involvement to account for the purulent sputum. Bronchoscopy was performed, and it was found that the pus was coming from the unsuspected right upper lobe. A bronchogram of the right upper lobe (fig. 16) shows a fairly extensive bronchiectasis.

Case 10. J. C., a white male, aged seventeen years, gave a history of left sided pneumonia four years previously, from which he had had a very slow recovery. He had had a productive cough since, with frequent bouts of fever, especially when the sputum decreased, which were followed by an increase in sputum, and return of temperature to normal. There had been frequent small hemoptyses.

Figure 17, a bronchogram of the left lung, shows a triangular density at the left border of the heart. On first inspection the bronchogram appeared normal. After more careful observation, however, it was noted that there is no lower lobe bronchus visible, and that the upper lobe fills the entire chest. Bronchoscopic examination showed an almost complete stricture of the lower lobe bronchus. An aspirating tube was passed through this strictured area and lipiodol was instilled into the collapsed lower lobe. Figure 18 shows an extensive bronchiectasis in the collapsed lower lobe.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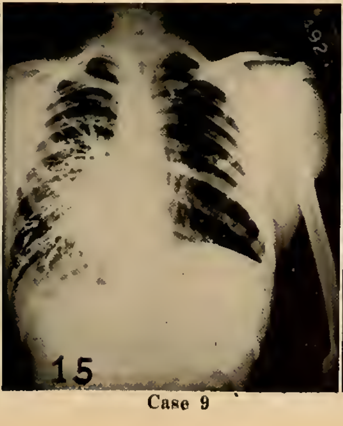
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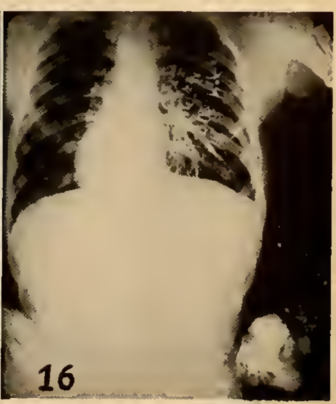
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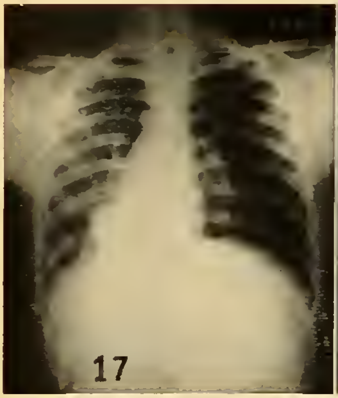
Case 9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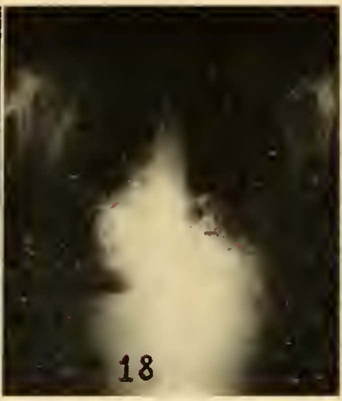
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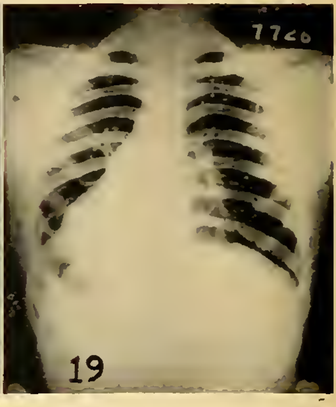

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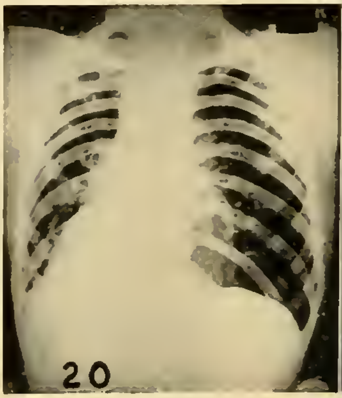
Case 10

After lobectomy by Dr. Churchill of Massachusetts General Hospital, Boston, the patient made an uneventful recovery and has been symptom free for three years.

Case 11. Mr. C. C., aged twenty-eight, had had a cough productive of two or three ounces of thick foul-smelling sputum for the last eight months, following what was thought to be influenza. There had been frequent small hemoptyses. The patient had lost eighteen pounds in the past eight months, and complained of an increase in fatigue, occasional night sweats, and low grade temperature. An x-ray film (fig. 20) showed a slight mottling in the upper part of the left lung, and what appeared to be a small cavity in the first interspace. The left diaphragm was raised and the heart shifted slightly to the left. Bucky films, not shown here, showed a cucumber-shaped mass behind the heart shadow. Bronchoscopy revealed a stricture of the left lower lobe. The aspirating tube was passed through the stricture, and lipiodol was instilled into the collapsed lower lobe. Another x-ray examination (fig. 21) showed an extensive bronchiectasis in the collapsed lower (left) lobe. A lobectomy was performed by Dr. Deryl Hart of Duke University Hospital with excellent results. Dr. R. E. Smith of Mt. Airy, the referring physician, states that the patient is symptom free except for an occasional slight productive cough. This, no doubt, is coming from the few bronchiectatic areas noted in the left upper lobe.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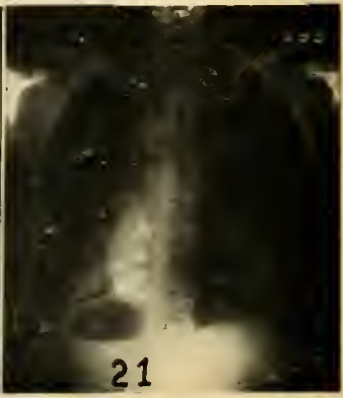
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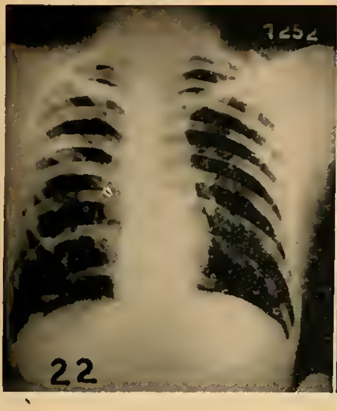
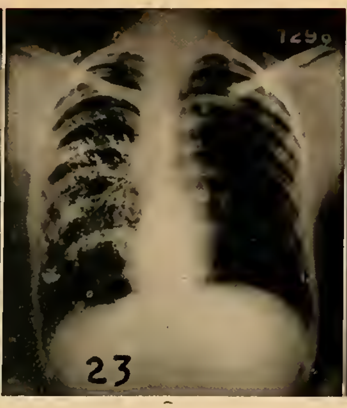
Case 11

Case 12. C. F., a white male aged nineteen years, complained of a slight productive cough of five years' duration. Three different rib resections on the left had been done for what was thought to be empyema during the last five years, and at each time a pint or more of thick pus was drained. The patient never felt good for more than a month at a time, and often had bouts of very high temperature. He had found that certain positions allowed him to raise more sputum, and that the temperature usually subsided following this.

An x-ray film (fig. 22) showed two large annular shadows at the left base, the lower one showing a small fluid level. The heart and mediastinum appeared to be pushed to the right. Bronchoscopic examination showed a definite abnormality of the left bronchial tree. Numerous branches extended



Case 12



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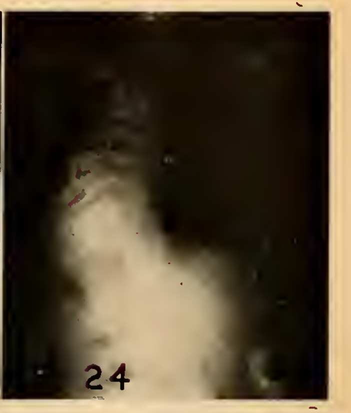

Case 13

in all directions from the main stem; no definite lower lobe bronchi could be made out. Figure 23, a bronchogram of the left lung, demonstrates the abnormal branching of the bronchi. It can be noted also that none of the oil is in the large cavities, though there is a small pooled area on a level with the ninth rib posteriorly. Diagnosis of congenital cystic disease of the lung was made. The cystic portion of the lung was removed by Dr. Julian A. Moore in Asheville.

Case 13. Mrs. S. R. L., aged twenty-three, had had far advanced tuberculosis for the past three years. A left-sided pneumothorax had been performed, and she had been discharged on exercise from a tubercular sanatorium eight months previously. Five weeks before admission to the Guilford County Sanatorium, she had had what was thought to be pneumonia in the collapsed lung. Since then she had had a most harassing cough, productive of thick purulent sputum and frequent small hemoptyses. Her appetite was good, but she was unable to keep her food because of vomiting brought on by paroxysms of cough. She had lost twelve pounds of weight in the past five weeks. There was a localized audible wheeze over the left chest. Bronchoscopy revealed a mass of granulation tissue around an old stricture in the lower left lobe. Granulation tissue was removed by biopsy forceps and treated with silver nitrate. The stricture was very narrow, but a small aspirating tube was passed through it, an ounce of very thick purulent secretion was aspirated, and lipiodol was instilled. Figure 24 shows an extensive bronchiectasis of the lower lobe. The cough was markedly improved, but because of the difficulty in raising sputum, it was decided to dilate the stricture. Three attempts were made with what appeared to be good results. Sputum was much more easily raised, and the temperature subsided. One month after the last dilation the patient died from what her referring physician, Dr. G. H. Sumner, thought to be a tuberculous meningitis. There is very little doubt in my mind that the hematogenous spread was a direct result of the manipulation of this stricture.

Abstract of Discussion

Dr. Charles H. Cocke (Asheville): Dr. Bonner's paper clearly emphasizes the fact that what was the unusual, the rather bizarre, and the difficult only a few years ago should be today either within the capability or at the disposal of every man who comes in contact with bronchopulmonary diseases. In the short length of time since Dr. Jackson improved on the bronchoscope the whole field of bronchoscopy has developed.

As we improve in our technique and in our ability to use the bronchoscope mechanically, we find that it has an expanding use not only in diagnosis but also in therapeutics. As Dr. Bonner has indicated, the procedure in the hands of a man who has had proper training is not a very formidable one.

Dr. Bonner referred to the removal of foreign bodies in the chest. Organic objects such as peanuts and watermelon seeds will not give manifestations on the x-ray film. It is usually these vegetative bodies which produce the very immediate disastrous changes, and which have to be removed immediately to prevent spirochetal infection. The bronchoscope is invaluable in such a procedure.

The proper approach to the study of bronchopulmonary disease is a four-fold one: First, from the history; second, from the clinical examination; third, from the laboratory studies; and lastly, from the bronchoscopic examination.

I think any patient with an obscure thoracic disease, or with symptoms of disturbances such as tracheal or repeated bronchial obstruction, or with an unusual cough which is not relieved by ordinary sedation, or with expectoration of unusual and undue amounts of pus, should have a bronchoscopic examination.

We have learned a lot by the use of the contrast media and by the use of varying positions of x-ray in the matter of atelectasis and bronchiectasis. Dr. Bonner spoke of localizing bronchiectasis, which is eventually going to end in either partial or total obstruction of that bronchus and then in bronchiectasis or atelectasis, or both. If the atelectasis is not very promptly relieved—and it may not always be relieved by some of the measures which have been advocated in the past—you have to treat it by opening up that bronchus, or else you will inevitably have the development of bronchiectasis. I agree with Dr. Bonner that these conditions can seldom be treated successfully by the use of the bronchoscope alone.

We have only recently learned to diagnose bronchial tuberculosis. It is very difficult to treat bronchial tuberculosis which will go on to bronchial obstruction. As a rule, the patient is so tuberculous that surgical removal is out of the question. I believe that this is a field that should be in the hands only of the skilled bronchoscopist.

Just recently Dr. Hart was able to take off a flap valve in the mediastinum of a patient who had developed an encephaloid condition, which a tuberculous patient will not infrequently develop during the process of pneumotherapy. That condition, if not alleviated by means of operation is going to be progressive, and, of course, the end result is a miserable death.

I think that Dr. Bonner has done us a very fine service; and if he has made this group of alert medical men bronchoscope conscious, we all owe him a debt of thanks.

OUR EFFORTS TO REDUCE THE MATERNAL MORBIDITY FROM CHILDBEARING

Thomas Leslie Lee, M.D.

Kinston

Shakespeare philosophizes as follows: "An enterprise when fairly once begun should not be left 'till all that ought is done." It is thus with the pregnant woman. Our responsibility does not cease with the birth of the baby. Our duty is to see "that all that ought is done" in so far as is possible to return the mother to her family and society a healthy woman, able to carry on the duties ascribed to her.

I regret that at this time I am unable to bring you new scientific truths from the field of obstetrics and gynecology. In my search for a subject I was much impressed by the absence of recent articles on obstetric morbidity and postpartum care. True, there are many statistical reports on maternal morbidity based upon a rise of temperature to 100.6° for two consecutive days during the puerperium. Morbidity is defined by Webster as follows: 1. Gloomy or pessimistic outlook or state of mind. 2. Unhealthy bodily condition, sickness. 3. Amount of sickness, sick rate. Based upon the above definition the actual obstetrical morbidity rate would be impossible to estimate.

Our efforts to reduce the morbidity from childbearing begin during the prenatal period—in fact, at the very first visit of the pregnant woman. At this time certain decisions must be reached and certain questions answered. Does the woman have any physical or mental defect which will be made worse by pregnancy and labor? Is the pelvis of adequate size to permit delivery from below? If this pregnancy is carried through, should she be allowed to become pregnant again? It is a well known fact that pregnancy exerts a most deleterious effect upon certain organs which already show evidence of disease—namely, the lungs, the heart, the kidneys and the hematopoietic system. When disease of these organs is found during the prenatal examination, this disease is practically always exaggerated during pregnancy. Even if the pregnancy progresses to a successful termination, the added strain of pregnancy is evident. In every instance an effort should be made to estimate the capacity of the pelvis. Since the advent of pelvic mensuration by the use of the roentgenogram much has been written to belittle the value of external and internal pelvimetry. It is my opinion that a fairly accurate estimate of the capacity of the pelvis can still be had by the use of the finger and the pelvimeter. True, much more can be learned from the x-ray, especially as regards the shape of the pelvis, which is most important. However, x-ray facilities are not always available, and not all patients can afford it. Therefore, we must at times still depend upon external and internal pelvimetry. Much sickness and invalidism can be prevented by using all known methods of examination in planning the method of delivery best suited for a particular case. As previously stated, certain diseases tend to be made much more severe by pregnancy. In order to prevent further pregnancies and further advancement of the disease, many women with such diseases should be sterilized at the time of delivery, either by cesarean section and ligation of the fallopian tubes or by allowing the patient to be delivered normally and performing the laparotomy twenty-four hours later. The latter method seems to be gaining favor, because of lower mortality and morbidity.

The diseases giving rise to obstetric mor-

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bidity during the prenatal period are many. Those most frequently encountered are anemia, toxemia and pyelitis. Anemia may be caused by some alteration in the hematopoietic system, or by hemorrhage. It is impossible to discuss all the etiological factors concerned in the production of hematopoietic anemia. I am convinced that such anemia is often due to malnutrition and vitamin deficiency. Hemorrhagic anemia often results from placenta previa or premature separation of the placenta, both of which are grave complications of pregnancy. The treatment of all anemias should be carried out with thoroughness, and every effort made to have the blood count as near normal as possible when labor begins. It is well to have the patient's blood typed and matched with that of some member of the immediate family who will probably be present during labor. This typing should be done during the second trimester of pregnancy, so that, should an accident occur, little time will be lost in replacing the blood loss.

During the prenatal period one must be on constant guard for the development of renal complications. These are always serious and demand immediate and continued treatment. The toxemias and pyelitis constitute the most frequent renal complications. If either of these conditions is allowed to go untreated permanent renal damage is sure to ensue.

During labor much can be done to alleviate unhappiness and sickness following the birth of the baby. As regards analgesia, the physician must be his own judge. These rules should govern its use: First, it must not be injurious to the baby. Second, it must not retard labor. Third, it must not be injurious to the mother. I believe in the use of analgesics. Personally, I prefer morphia and scopolamine in primiparas and the barbiturates, paraldehyde and scopolamine in multiparas. Never should analgesia approach anesthesia.

The old idea of the woman's "bearing down" throughout the whole labor has long been abandoned, although a few nurses and relatives still adhere to this idea. Occasionally in posterior positions of the occiput the straining or bearing down effort becomes a great help and should be encouraged. Much pelvic relaxation with its discomfort will be prevented by abolishing the straining effort during labor except where strictly indicated.

Probably the greatest advancement in the prevention of obstetric morbidity during labor is the popularizing of an old operation, that of episiotomy. Many women are delivered without external evidence of laceration of the perineum, but return in six weeks with a bulging cystocele and rectocele. These conditions are due to the invisible submucous tearing of the perineal fascia and muscles. Episiotomy protects not only the perineum, but, more important, the anterior vaginal wall and the supporting structures of the bladder. A lacerated perineum with rectocele is easy to repair, but it is next to impossible to restore the anterior vaginal wall and bladder supports to their normal condition by any operative procedure. One should never hesitate to do a repeat episiotomy on a multipara; for the same indication is present at the second or third labor as was present during the first.

The uterine cervix during labor demands the greatest of care. No operative procedure from below should ever be attempted until the cervix is completely dilated and obliterated. Slow and gentle dilatation is always preferable. If rapid dilatation must be had it is much better to incise the cervix than to try to dilate by force. In the use of forceps before the fetal head is entirely through the cervix, extreme caution must be used to be sure the forcep blade does not include the cervix in its grasp. The extraction should always be gentle. Never should undue traction be applied to the forceps. One only has to examine a few cervices immediately after normal labor and see the extensive lacerations, to appreciate what may happen by the injudicious use of forceps. When deep lacerations of the cervix occur during either spontaneous or instrumental delivery, they should be repaired immediately.

Infection has been and still is a great factor in the production of morbidity from childbearing. Our greatest advancement in this field has been the recognition of its source—droplet infection from the nose and throat of the attendants, air-borne infections, and contact infection. Today the recognized treatment for infection is conservative—by transfusions, a well balanced diet and the sulfonamide group of drugs. The best treatment of infection is prevention. Most infections are preventable. In my experience the free use of mercurochrome has proven most beneficial. Every hour during labor a 4 per cent solution of mercurochrome is sprayed upon the vulva. Following labor 4 drachms of 1 per cent solution is instilled into the vagina twice daily.

The management of the third stage of labor deserves especial consideration. Never attempt to express the placenta until separation is complete. Wait at least one hour before invading the uterus to remove the placenta manually unless active bleeding is present. Never try to separate the placenta from the uterus manually unless a line of cleavage can be found. Not all postpartum hemorrhage comes in gushes. The continuous ooze is probably more dangerous than the gushing type; for it is often neglected until the blood loss is enormous.

During the immediate postpartum period our efforts should be directed toward the conservation of blood. This is most important in the prevention of obstetric morbidity. If unusual bleeding is present, its source must be located. The cause will usually be laceration of the cervix or perineum, retained placental fragments, uterine inertia or atony. If the bleeding be from the cervix the laceration should be repaired immediately. (This can be done at home.) If it is from retained placental tissue, it should be removed. If it is from uterine inertia the uterus should be firmly packed with sterile gauze and oxytocics administered.

The greatest single aid in the prevention of obstetric morbidity lies in adequate postpartum care. In our efforts to promote prenatal care, the care of the woman after labor has been somewhat neglected. I do not believe that half as many women receive postnatal care as do prenatal care. To the gynecologist this is much more apparent, for it is he who usually sees the end results of good, bad and indifferent obstetrics.

The postpartum period is one of the most important periods in the life of a woman. At no other period are so many physiological changes occurring in the body and at the same time so many pathological conditions being repaired. During this period the physician has a real opportunity to aid in the reduction of the morbidity from childbearing.

During the lying-in period many conditions may arise which may have serious consequences. The bladder during this period should never be allowed to become over-distended. If catheterization is necessary it should be done with the utmost of care and gentleness. Residual urine during the lying-in period is relieved by completely emptying the bladder by catheter at least every twelve hours, even if the patient is voiding. Infection is probably the greatest source of danger during this period. Every effort must be made to prevent its occurrence. Lactation is also a frequent cause of morbidity. If the breasts become over-distended and enlarged, they should be emptied by gentle massage with camphor in oil, the gentle use of the breast pump and the application of ice bags. Testosterone has been used with much success during the stage of engorgement. Fissure and cracks of the nipple must receive immediate and careful attention. They are best alleviated by the application of alcohol dressings and rest to the part.

At the end of the sixth week, involution and return of the organs of reproduction to normal should be about complete. At this time a thorough examination of the mother should be made, with especial attention to those abnormalities that have been noted during the prenatal, delivery and immediate postpartum periods. The perineum should be examined, repaired lacerations inspected and the general supporting power of the perineum estimated. If pathologic conditions are found, instruction as to their care should be given. The most important examination to be made at this time is that of the cervix. It should be palpated and inspected. Pathological conditions of the cervix are among the most important factors in sickness following childbirth. The most frequent lesions are lacerations. Next in order is eversion or granular endocervicitis. Chronic inflammation of the pelvic cellular tissue results from the lymphatic extension of infection consequent to cervical injuries. The infection spreads laterally to the parametrial tissue and broad ligaments, and posteriorly along the sacro-uterine ligaments. The lymphatics between the bladder and uterus also become infected, thus causing infection within the bladder. In my experience the traumas and infections of childbirth are a frequent cause of lower abdominal pain in women. It is believed that cervical lacerations and infections are the forerunners of cancer. Cervical eversions and minor lacerations and infections are readily amenable to office treatment without anesthesia. A single treatment with the nasal tip cautery or surgical diathermy is usually sufficient to effect a cure. When parametritis has developed, heat in the form of continuous hot douches (using 3-5 gallons of water at low pressure), and non-specific protein therapy will usually result in a cure of the pelvic infection.

In about 25 per cent of the cases examined postpartum the uterus will be found in a position of retroversion. An effort should always be made to replace the organ. Reposition can be accomplished in the majority of cases. After the organ is replaced, it should be held in position by a well fitting Smith-Hodge pessary or modification thereof. The pessary should be worn for three months and should be removed, cleansed and replaced each month. In the vast majority of cases this simple procedure will effect a cure. The degree of involution of the uterus should also be noted. If the uterus continues large and boggy, oxytocics and heat should be prescribed. If at any time during pregnancy or labor there has been evidence of toxemia or pyelitis a careful examination of the urine should be made and the blood pressure recorded. A large percentage of the toxemias are not cured after labor. The aftermath of chronic nephritis may greatly diminish the usefulness of the patient and shorten her life considerably. All patients who have suffered from toxemia should be warned of their condition and advised as to their care for years to come. All pathological conditions found at the six weeks examination should be treated and followed until a cure is obtained.

When the mother is discharged information as to her future care should be given. The value of a yearly check-up examination should be fully explained. If every woman would have a complete pelvic examination every year, I believe that the number of cures of cancer of the female genital organs would rise 50 per cent. Those individuals who have had toxemia and apparently made a complete recovery should be advised as to future pregnancies. Those who have not recovered completely, but still have an elevated blood pressure and albumin and casts in the urine should be advised as to their condition and should be under constant medical supervision.

Our efforts to reduce the morbidity from childbearing must be both preventive and curative. If we are able to prevent disease, we do not have to worry about its cure. Once a disease or process has begun, its progress must be arrested if possible, before it has caused permanent damage. All diseases caused by or incident to pregnancy and labor must receive treatment until a cure is obtained if such is possible.

SEXUAL INADEQUACY

G. CARLYLE COOKE, M.D., F.A.C.S.

WINSTON-SALEM

There is growing interest in the diagnosis of constitutional inadequacy. Dr. Alvarez(1) states that one out of every three patients he saw last year belonged in this group. There are two or three significant points in the findings which help in making the diagnosis. It occurs most frequently in young married women. Usually there is a history of similar symptoms in other members of the preceding or immediate family. Some of the symptoms of which these patients complain are nervousness, weakness, vague aches and pains all over the body, loss of weight, insomnia, menstrual disorders and unhappy married life. There are other symptoms, but these are more or less constant. One of the most frequent findings is thinness and frailty.

The saddest part of the whole story is that when such a diagnosis is made, these poor mortals are usually adjudged hopeless and are often advised to stop spending their money in a search for medical aid. Such advice discourages these unfortunate victims and increases the income of the quacks.

This paper will deal with a condition which the author believes is frequently placed in that category unadvisedly. This condition is so old as to reach back to antiquity, but a diagnosis which will adequately describe it is, so far as I am aware, entirely new. The term "sexual inadequacy" is descriptive of a condition which may lead a patient to give a history similar to that described under constitutional inadequacy. Sexual inadequacy must be differentiated from impotence, as the latter precludes sexual intercourse.

Whether or not the caption is accepted, the fact remains that a vast domain of ills are directly attributable to sex derangements. The sex function is motivated by one of the strongest laws of nature. It is a subject about which all mankind is most ignorant. The subject was not mentioned during my entire medical training. It is the subject least discussed in medical literature. It is my firm belief that doctors especially

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Read before the Section on Gynecology and Obstetrics, Medical Society of the State of North Carolina, Pinehurst, May 15, 1940.

1. Alvarez, Walter C.: Address to Forsyth County Medical Society, March 11, 1940.

should be better informed as to normal sex behavior and be prepared to treat the ills which may arise from sex inadequacy. One is more or less apologetic in offering a treatise on the subject, and yet it is so far-reaching in its possibilities that the attempt is herewith made.

To make the object of this paper clearer, a typical case is presented.

A white woman, aged twenty-four, married two years, came complaining of weakness, nervousness, pains in lower abdomen, back and legs. She could not sleep, had a poor appetite, had lost weight and felt as though she could not carry on longer. She had been in normal health until about a year previously and all the symptoms came on insidiously. Her menstrual history was normal. She had one child thirteen months old. Her periods had been regular and normal for the past eight months. She was intelligent and well educated. Her husband was a professor in a large school. Further questioning showed that she had had dyspareunia all her married life. She became pregnant soon after marriage without ever experiencing an orgasm. Since childbirth she had been unable to have an orgasm. Intercourse had become more painful and was repulsive to her, and she felt that she should leave her husband.

Examination showed a well developed, slightly undernourished good-looking white woman. She had a relaxed vaginal outlet, a bilaterally lacerated cervix with eversion and very tender adnexa. No other abnormality could be found. Her tonsils had been removed, and the urine and blood count were normal.

A survey⁽²⁾ last year in California showed that only 50 per cent of the married women of that vicinity ever experienced an orgasm. Other investigators report only a little higher percentage in other localities. Since this is definitely an abnormal condition and is of such widespread prevalence, it must undoubtedly be a cause of much female suffering. The sex inadequacy may cause constitutional symptoms indirectly, or constitutional derangements may cause sex inadequacy and thereby set up a vicious cycle. In either event, no gynecological consultation is complete when this function is not considered.

There are several definite etiological factors in this condition. One is ignorance. Most women and many men, upon marrying, do not know that it is normal for coitus to terminate with an orgasm for the female partner. Naturally, they do not know what to expect. If they have not been informed, neither may know when it has been accomplished. As the female sex organs are less sensitive than the male's, the former may not and usually is not capable of complete function until after a period of experience. In a study of 100 women I found that it required an average of two months after marriage to realize complete satisfaction from coitus. Very rarely has the first experience been effective, and in one case an orgasm was not experienced until eight years had elapsed. Others are disillusioned into incapacity. The female has by nature assumed the passive role in sex and many women believe that if they exercise undue effort in the procedure they will make a bad impression on the husband.

On first thought it may seem that the lack of orgasm following a sexual seance is of no significance so far as health is concerned. This opinion seems to be just as common among doctors as with laymen. A prominent authority⁽³⁾, when asked what should be done for this type of person replied, "Tell her to make her husband think that it has been satisfactory and let it go at that." After seeing over a period of years effects directly traceable to this condition, I am thoroughly convinced that this is a very erroneous idea. Another case report here will serve to illustrate very forcefully and vividly this point.

A rather robust good-looking married woman of average intelligence came for complete examination, stating that she had been to nine different doctors during her married life of eight years. She had had five operations ranging from tonsillectomy to appendectomy. Nothing had given any definite relief of the train of symptoms enumerated above in similar cases. She had a very good and attentive husband and two children. There was no history of constitutional inadequacy in the family. Her sexual history showed that she had never experienced an orgasm. In detail, she described the typical course of events relative to her sex experience, but only after intense questioning. After a normal period of love making at the

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2. Emil Novak, in a personal interview.

3. Science News Letter, March, 1940.

dinner table and parlor before bed time she would become very much excited. When they retired her husband would consume ten or fifteen minutes in completing coitus, then turn over and sleep soundly all night. She, on the other hand, could not go to sleep, would get up quietly to avoid disturbing the husband, go into another room and read or amuse herself some other way for two to four hours before she could gò to sleep. Next day she would be tired and nervous. Taking care of her household duties would tax her endurance to the extreme.

Physical examination showed nothing abnormal except tender pelvic organs and a chronic rhinitis which she designated as "catarrh" or "sinus trouble". I gave her a careful explanation of what normal sex behavior should be, and it is with much satisfaction that I report that she has remained in good health ever since—a period of four years.

Another etiological factor is lowered sensitivity of the nerve mechanism which controls the sex function. This may be due to lack of development and hormone imbalance or deficiency. However, in view of other known causes of lowered nerve conductivity, it is reasonable to assume that there may be a trophic disturbance in the nerve reflex. The possibility of vitamin deficiency is suggested.

This explanation is offered because in some cases after thorough instruction and adequate understanding, with no physical or hormone defect, and after weeks of effort and practice, some women have been unable to cohabit normally with their husbands.

A most frequent cause of sex inadequacy is physical imperfection. The erectile tissue is to a great extent activated by the constricting muscular action of the superficial perineal muscles, mainly the sphincter vaginae. These muscles are usually very poorly developed in young white women, because before sex life is entered into they are almost entirely functionless. If these muscles are injured in childbirth while yet undeveloped, as in the first case reported, these women never develop the capacity for orgasm until they are repaired. The patient in the first case report became pregnant immediately upon marriage, before information and experience were effective of happy sex relations, and after childbirth she was rendered physically incapable.

Another causative factor is that some women fear that if orgasm occurs they are more apt to become pregnant. This, of course, is an erroneous conception.

Finally, perhaps one of the most important causes is hormone deficiency, although many women have perfectly normal sex functions, with complete absence of ovarian hormones, which we usually attribute to the stimulation of sex functions. These, however, are those whose sex functions were well established before there was a hormone deficiency. Libido is dependent upon hormonal stimulation, in the absence of an inducing partner; but it can be induced through stimulating a feminine instinct which is not dependent on those hormones that we usually consider sex hormones.

Pathology

Not even the professional man, unless he has gone into these physical processes, can appreciate the assertion that mere lack of orgasm following the sex act can cause a pathological condition; yet this is true, and that is why the term "sex inadequacy" has been assigned to a definite clinical and pathological entity.

During a sexual seance, the mucous membranes become irritated and hyperemic, the genital muscles become more or less spastic. The pelvic structures become engorged with blood because of a retarded venous flow. This is part of the *modus operandi* of erectile tissue. The nervous elements are made more excitable, and the sympathetic system is changed so that its functions controlling other organs and metabolic processes are inhibited. For instance, during sexual excitement, digestion, bowel and bladder functions are inhibited. Erectile tissue all over the body is activited through its intimate sympathetic nerves. The nipples become firm. The mucous membrane of the nose, which contains much erectile tissue, especially in some of the lower animals, becomes engorged. Many persons, most of whom are unconscious of the real physiological action, have nose bleed during sex excitement. The nasal engorgement which may ensue causes obstruction to sinus drainage. If it is temporary it leads to no harm, but if prolonged it may cause sinus infection. These are just a few of the many physical deviations from the usual body functions that occur as direct result of sexual excitement. There are probably greater disturbances in the mental field, but these are best explained by the psychiatrist.

Nature has made the body capable of withstanding these changes over short periods of time, but it cannot tolerate excesses without pathological changes.

Every doctor is instantly conscious of the bad effects of excessive sexual indulgence, but few of us fully realize that when the normal sex act is not completed by an orgasm, injurious effects may follow in male or female. When an orgasm occurs there is a rapid recession of all these changes to a state of rest. The congestion of tissues is relieved. The reflex arcs of the nervous system return to an unexcitable condition. Those unfortunate women who have their sex functions thrown into excitement and left in that condition may gradually return to normal, but there are many who do not. These are apt to go the rounds of numerous doctors who are inadequately equipped to give them the medical aid that will cure them.

Treatment

Heretofore, treatment that has come to the attention of the writer has been more or less empirical. One has difficulty in finding any well rounded consideration of the points in mind. However, when a pathological process is understood, one may begin scientific treatment. That applies also for sex inadequacy. While the study of this condition is new and the material has been so limited that results are worthy of no definite conclusions, some treatments have resulted in satisfactory ameliorations.

First, of course, the diagnosis must be established and its causes tabulated. Simple instructions sufficient to dispel the effects of ignorance are a first requisite. All patients should know the importance of completed sex functions and how to effect this end, and should be instructed that it should not be indulged in when a favorable outcome cannot be anticipated. The art of love making might be taught married couples with far reaching benefits.

Second, all physical defects should be corrected. Dyspareunia must be relieved; removal of infection from the tubes and pelvic organs may be necessary. A widely dilated cervix may be the source of this affection. This is especially important where genital hygiene is not well established. A high bacterial flora of the vagina may cause infection to be forced through the uterus and into the tubes and pelvic peritoneum without causing an appreciable endometritis. It is my belief that many non-specific pelvic infections exist and are contracted from this source. Adhesions occur insidiously between the tubes, ovaries, broad ligaments, sigmoid and the peritoneum of the cul-de-sac which cause much pain when their relations are disturbed. Pelvic infection and ovarian blood supply must be corrected; repair of a lacerated cervix may prevent recurrence, but in some cases tying off the tubes may be necessary.

Third, the pelvic floor and superficial genital muscles must be free from injury. In our perineal work we are apt to overlook the superficial, especially the anterior muscle defects. If these are defective, erection of the clitoris may be abolished and orgasm impossible.

Fourth, the general physical condition of the patient must be well considered. The nutrition, including vitamin adequacy, should be taken care of. Overwork and fatigue should be contraindications for sexual indulgence, and both partners should be warned of this mistake.

Fifth, hormone insufficiencies may be one of the worst etiological factors to correct. Here a short survey of the status of available sex hormones might be of interest. It can be safely said that at present the estrogenic hormone, of which theelin is an example, will do three things consistently: It will relieve the nervous symptoms of menopause; it will increase the flow of blood from the uterus, but will not produce normal menstruation; and it will increase the congestion of the genital organs. This may be of value in treating gonorrheal vaginitis in children but is definitely less called for since the advent of sulfanilamide.The congestion and hypertrophy of these tissues may increase libido, and in this way be of value in the disease under consideration.

The anterior pituitary-like substances, of which antuitrin S is an example, will prevent excessive uterine bleeding when it is due to glandular derangement. It is effectual both in menorrhagia and metrorrhagia. It may be of value in stimulating normal growth in the adolescent of sex structures. Antuitrin S will sometimes relieve undescended testicles and also stimulate the growth of infantile female genital organs.

Progesterone—or corpus luteum—will relieve the tendency to abortion. Recently it has been found to be of value in reducing the over-congestion of sex organs when theelin is used to combat hot flashes of the menopause. One to ten units of progesterone with each 5000 units of theelin may well be given.

As yet, we have no available sex hormones which will consistently produce ovulation and thereby normal menstruation. The precipitant factor of the pituitary element that is found in the blood of the pregnant mare (Gonadogen—Upjohn) has been very consistent in its action on lower animals, and to a less extent on humans. It is hoped that this drug will eventually have something of value to offer us.

In the treatment of sex inadequacy, the other endrocrine glands must be well considered. Sex functions may not be dependent on hormones from the pituitary and thyroid, but the inadequacy of these glands may be a factor in sex inadequacy. Lack of hyperemia and response to nerve stimulation on the part of the genital organs may be due to lack of thyroid. Even the mild cases of myxedema should be sought out. Again we are especially apt to find sex inadequacy with disease of the pituitary. Froelich's and Cushing's syndromes, or even a tendency to one of these conditions, may be sufficient to produce sex inadequacy. Froelich's syndrome may be corrected by x-ray. Gonadal obesity or insufficiency should certainly be sought for in all cases.

One other pathological finding not mentioned above may be a causative factor, and may be relieved. Some of these patients show infantile uteri and poorly developed genital organs. This is not necessarily always present; nor is its presence indicative of sexual inadequacy, as sometimes the functions are well accomplished with these findings.

Whole ovarian substances (Armour) will relieve the acne of adolescence in both boys and girls. In some instances it may improve the development of sex organs.

Pituitary extract, in some cases, has shown marked benefit in pituitary deficiency, but enormous amounts are required. None of these last three products are at all consistent in their actions, but their possibilities should not be overlooked in treating obstinate cases of sexual inadequacy.

Abstract of Discussion

Dr. Paul W. Johnson (Winston-Salem): This subject is a very difficult and delicate one for both the patient and physician. It is also an intangible subject, because it involves so many phases that it is hard to get at the basis of an accurate diagnosis. It takes in the financial and social standing of the family, the physical make-up of both husband and wife, and the understanding and regard which each mate has for the other.

As Dr. Cooke has already stated, it is necessary to try to get at the underlying cause. I believe that in possibly 85 per cent of cases this is due to the husband rather than to the wife. I make that statement because of the report recently given by Dr. Huhner of New York. He makes the point that most young men who have had sexual relationships before marriage have had it with women of low standing—that is to say, prostitutes—and this, of course, bears no relationship to love and to the marital relationship. The young husband does not take into consideration that his wife has not lived as he has.

Another phase is that the young lady has by her upbringing often received a mental hazard. This, I think, might be classified as intellectual frigidity. We come in contact with a number of cases of this sort.

A difficult situation to handle is to have husband and wife both come to the doctor's office with an argument in their minds before they come. Recently I was consulted by a couple of this sort, both of whom were college graduates. Both had agreed to come to me. The husband said, "Dr. Johnson, I realize that there must be something wrong with my wife." After I had talked with them they had an argument, almost got into a fist fight. I indicated after a complete examination of the young lady that there was no physical defect, no hormone insufficiency, but that there was a lack of cooperation and understanding on the part of both man and wife.

I believe that in 85 per cent of the cases the underlying cause is due to misunderstanding on the part of the wife and the husband.

There is one other form of frigidity which is sometimes mistaken for dyspareunia. It is difficult to make this diagnosis, because a part of the mucous membrane is anesthetic and part of it is not.

The treatment of this condition after the diagnosis is made consists, according to Dr. Huhner, of a large vaginal electrode administered into the vaginal wall, and the sinusoidal galvanic rod passed for about ten minutes. Dr. Huhner states that it is perfectly safe to give these treatments twice a week. His last report was that this was really a better procedure than an attempt to segregate the various sensitivities of the mucous membrane.

It is interesting to note that 40 per cent of those cases with absolute anesthesia, or absolute frigidity, were within a few years classified as psychopathic patients. This percentage was drawn from New York City. Among those who did have an orgasm, only 2 per cent were classified as psychopathic.

Of course, there has been a lot of discussion on the use of various estrogenic hormones. In a comparatively large number of cases of this sort, we have tried practically all of the drugs that are on the market, including theelin and antuitrin and I am sorry to say that none of them could be classified as a hundred per cent successful.

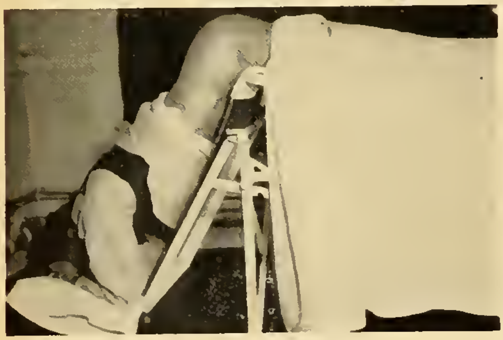
This is a condition which the medical profession must face, and which will become increasingly prevalent in the future.

THE RECOGNITION AND MANAGEMENT OF SOME COMMON RECTAL CONDITIONS

JAMES F. ROBERTSON, M.D.

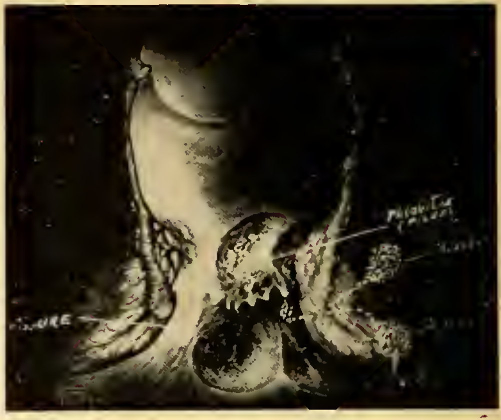
WILMINGTON

Complaints referred to the rectum and anus are among the most frequent with which the surgeon has to deal; an apparently trivial symptom is at times the only clue to the true nature of the ailment. The time has passed when we call all such complaints 'piles' and prescribe suppositories without making adequate rectal examination; and the equipment needed for such an examination is so simple that there is really no excuse for neglecting to make it. I have found that a head mirror with reflected light is very dependable if the patient is placed in proper position (fig. 1); and that palpation plus the use of the anoscope will disclose any lesion of the anus and lower rectum, and some lesions of the rectosigmoid. In many cases it may be necessary to employ the proctoscope or sigmoidoscope, and to make use of biopsies and smears to determine the diagnosis.



1. Position of patient for rectal examination.

In my private practice I have been impressed by the large number of patients who present themselves with symptoms referable to the rectum, and by the large variety of lesions found in this group. I have taken from my case histories the records of 1740 consecutive patients who have come with some complaint referable to the rectum, and find that they fall into the following classification. I wish to call your particular attention to some of these conditions; but it is obvious that I can discuss only a few of them, and that time will not permit me to discuss any one of them fully.



2. Showing how infection in crypts may spread in various directions. (Modified from Buie, Mayo Clinic Monographs).

Tabulation of Patients Presenting Symptoms Referable to the Rectum

Hemorrhoids	1015
Fissure	207
Fistula	117
Pruritis	97
Polyp	61
Dysentery	37
Abscess	35
Proctitis	33
Carcinoma	27
Cryptitis	25
Stricture	20
Ulcer	20
Prolapse	11
Venereal lymphogranuloma	8
Chronic ulcerative colitis	7
Pilonidal sinus	6
Recto-vaginal fistula	3
Condylomata	3
Agranulocytosis	2
Tuberculous ulceration	2
Gumma	1
Impaction	3
Total	1740

In the first three of these conditions I believe the usual initiating cause to be an infection in the anal crypts (fig. 2). Depending on the direction and extent of spread which the infection takes, it will result in: (1) localized phlebitis of the superior hemorrhoidal veins with engorgement and dilatation producing internal hemorrhoids; (2) spread of the infection by contiguity or through the lymphatics along the anal canal causing fissure; or (3) burrowing of the infection into the adjacent tissues to cause perirectal or ischiorectal abscess and then fistula. In most of the hemorrhoid cases the predominant symptoms are bleeding and protrusion. If there is no pain this usually

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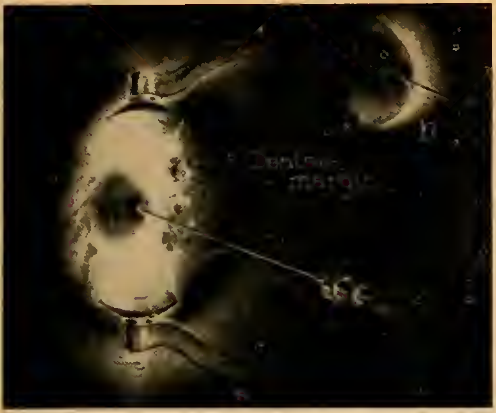
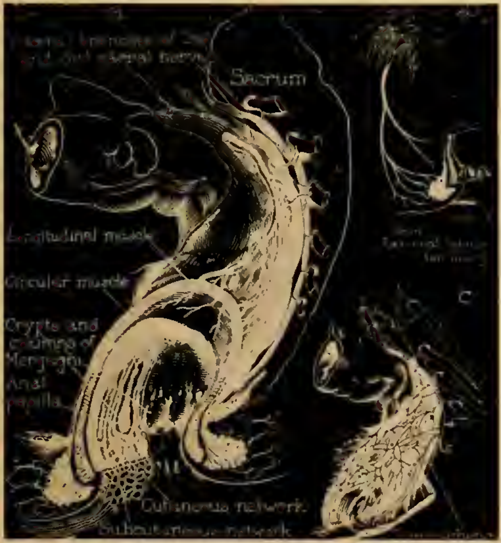
Read before the Section on Surgery, Medical Society of the State of North Carolina, Pinehurst, May 14, 1940.



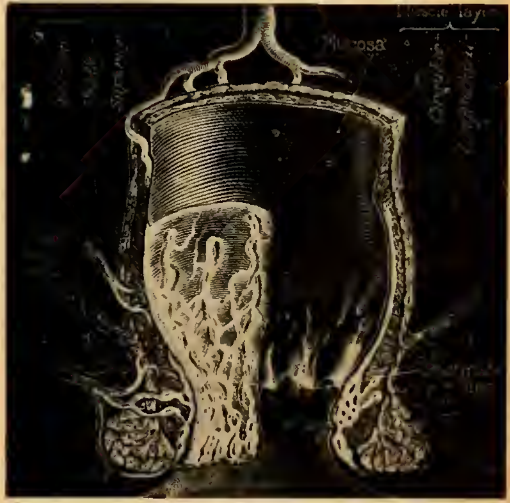
3. Showing needle in center of hemorrhoid for injection. (From Buie, Mayo Clinic Monographs).

means that they are internal hemorrhoids, situated above the pectinate line. This type lends itself particularly to treatment by injection. Many are complicated by other conditions such as fissure, thrombosis, hypertrophied papillae etc.; and with these it may be necessary to clear up the complicating condition before giving the injection treatment (fig. 3). In some the treatment should always be surgical; but I want to stress the fact that an increasing number of these cases can be treated in the office by injection with the expectation of cure in about eighty per cent of cases. By operative treatment the number of expected cures would be about ninety per cent.



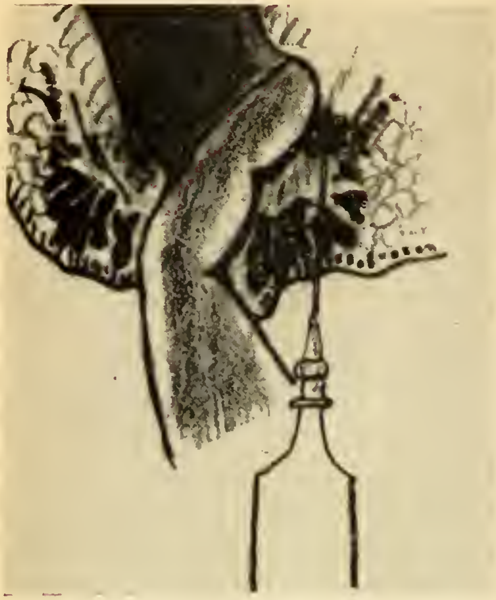
4. Distribution of nerves and lymphatics at the anorectal junction. (From Buie, Mayo Clinic Monographs).

Let me pause here to remind you that in the embryo the proctoderm, carrying the inferior hemorrhoidal vessels, the sensory nerves from the sacral segments, and the lymphatics, joins at the ano-rectal junction with the hindgut, which is supplied with the superior hemorrhoidal vessels, the sympathetic nerves and a separate system of lymphatics (fig. 4). It is easy to see why an insignificant lesion in the anal canal may cause excruciating pain, and how an inflammatory lesion in this region may cause tenderness and enlargement of the inguinal lymph nodes, whereas a large ulcerating lesion in the rectum may cause no pain or other symptoms except some blood with the stool (fig. 5).



5. Showing the hemorrhoidal veins and anal crypts. (From Buie, Mayo Clinic Monographs).

One of the commonest and most painful of rectal conditions is anal fissure. This should be treated by relaxation of the sphincter muscle and attention to the infected crypt or infected sentinel pile which is causing it. This relaxation should not be accomplished by forcible divulsion of the sphincter muscle, but by the injection of some relaxing solution, such as Gabriel's solution, into the muscle (fig. 6). This will relax the muscle for a period of seven to ten days, and at the same time anesthetize this region so that there is no tendency for the muscle to become spastic. After this is done no other treatment is necessary except the use of hot applications such as one would

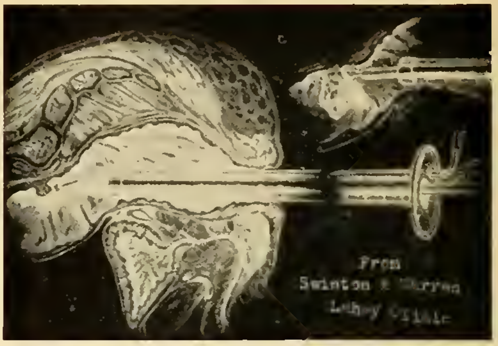


6. With finger in rectum as guide, the Gabriel's solution is deposited in the sphincter muscle.

use in any other region where the skin has split and some infection has taken place.

Polyps of the rectum and lower sigmoid are not uncommon in adults, and are often seen in children. They usually give no pain, but are announced by the passage of bloody mucus in the stool with some tenesmus. Most of them are benign, but malignant degeneration does occur and pathological examination should always be done. Their removal is best accomplished with the snare and coagulation (fig. 7). It should be remembered that they are often multiple.

In recent years amebic dysentery has become increasingly common. The cases here tabulated are included only because the patients came to me saying that they had rectal trouble. Their treatment consists of the eradication of the endamoeba histolytica by chemotherapy.



From Swinton & Warren Lahey Clinic

7. Method of snaring and coagulating rectal polyp.

In a series of about two thousand cases of carcinoma of the large bowel observed at the Mayo Clinic and proved by operation and pathological examination, 672, or 33.6 per cent of them were situated in the rectum or at the rectosigmoid junction. Every one of these 672 cases could readily have been diagnosed by the first physician they consulted if a proctoscopic examination had been made; yet the operability of these patients at the time they come to the surgeon is only about 65-70 per cent, and the duration of symptoms about eight to twelve months. Furthermore, about 65 per cent of carcinomas of the rectum fall into the lower grades (I and II of the Broders classification) of malignancy, and offer the surgeon an excellent chance for their ultimate cure. The treatment for these conditions consists in the wide extirpation of the growth, along with the regional glands and lymphatics, by the method which seems most suitable in the individual case. Generally speaking, the one-stage combined abdominoperineal resection of Miles is the operation of choice. However, the condition and age of the patient, the degree of obstruction, and various other factors may make a two-stage procedure seem preferable. Equally as important as the technical procedure is the preoperative preparation of the patient. Attention to cleansing of the bowel, a low residue diet with liberal allowance of vitamins, the administration of blood and glucose, all have their place in the preparation of the patient for operation. Unfortunately in some only palliative measures such as radium, x-ray and surgical diathermy can be used. This latter method deserves further mention. In 1935 Dr. Alfred A. Strauss of Chicago reported the results of the treatment by surgical diathermy of 42 patients suffering from carcinoma of the rectum, with the apparent cure of 31 of them(1). Later, in a paper at the Southeastern Surgical Congress in New Orleans, he reported some additional cases. After hearing this paper I arranged to spend a week at the Michael Reese Hospital in Chicago with Dr. Strauss and had an opportunity to observe his work, and to examine and talk with a number of his patients. I

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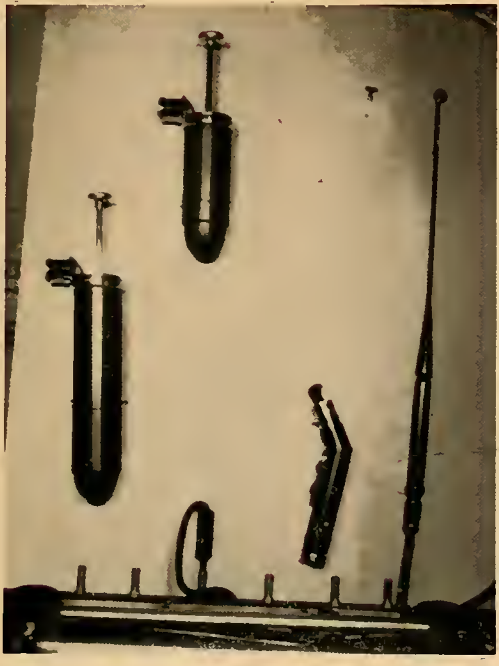
1. Strauss, Alfred A.; Strauss, Siegfried F.; Crawford, Robert A.; and Strauss, Herman A.: Surgical Diathermy of Carcinoma of the Rectum, J. A. M. A. 104:1480, (April 27) 1935.



8. Bakelite specula with light and electrodes devised by Strauss for the application of surgical diathermy to carcinoma of the rectum.

am satisfied that the treatment has some merit, and believe that in inoperable carcinoma of the rectum, in those who refuse operation, or in those who are physically unable to withstand operation, this is the procedure of choice. I have used this method on a few cases and can report at least one proven case cured with no recurrence after three and one half years.

Prolapse of the rectum in infants which does not respond to the usual non-operative methods of treatment has been relieved in two cases by the injection of sclerosing fluid under the thickened and loose bowel lining, placing the solution in three lines spaced at equal intervals along the long axis of the bowel. This solution encourages the formation of fibrous tissue under the mucous membrane, causing it to adhere and preventing subsequent prolapse.

Cryptitis is very common and is present in a large number of the conditions above enumerated. As we have seen, it is the immediate forerunner and probable cause of hemorrhoids, fissure and perirectal abscess and fistula. We should look for and recognize this condition and treat it by local applications, the administration of sulfanilamide, and in stubborn cases by the excision of the valve to uncap the crypts.

One of the most distressing conditions met with in lesions of this region is venereal lymphogranuloma of the rectum. The symptoms of this condition simulate more nearly those of carcinoma than any other with which I am familiar, and the proctoscopic picture may be confusing. Typically the clinical picture is that of a female with a history of progressive bloody mucous discharge from the rectum with tenesmus and periods of constipation. On proctoscopic examination the advanced cases show stricture, extensive ulceration and hypertrophy of the mucous membrane, which on palpation has an India rubber consistency and a granular surface. These cases are not difficult to diagnose, especially when there is a positive Frei test. Many early cases go unrecognized and are treated for hemorrhoids, fissure and fistula; and as Carleton Mathewson says(2): "If an operation is done a stricture may develop later which is attributed to the trauma of the operative procedure, when actually it would have formed without the operation, and the surgeon may have been entirely unaware of the true underlying pathological process."

The earliest symptom of this condition is burning or itching of the perianal skin with slight mucoid discharge from the rectum. Examination at this time reveals either localized or diffuse edema of the mucous membrane of the rectum which bleeds easily and soon develops a granular appearance, and a pouting of the mucous membrane into the anoscope which may be mistaken for internal hemorrhoids. Later minute elevations appear on the swollen mucous membrane and digital examination at this time may reveal the presence of tender glandular swellings beneath the mucous membrane. At later examinations areas of induration in the adjacent tissues are recognized which slowly infiltrate and finally encircle the lumen of the bowel. At this time ulceration ensues and the mucoid discharge is replaced by bloody mucopurulent discharge. Many therapeutic agents have been used for this condition with but little success. Antimony and potassium tartrate, Frei antigen and fuadin have given the best results as a rule.

In February, 1939, Drs. Alva A. Knight and Vernon C. David reported remarkable

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2. Mathewson, Carleton, Jr.: Inflammatory Strictures of the Rectum Associated with Venereal Lymphogranuloma, J. A. M. A. 110:709 (March 5) 1938.

results in 2 patients suffering from venereal lymphogranuloma after being treated with sulfanilamide(3). Since reading this report I have used this drug in the treatment of this condition with dramatic success in 4 patients.

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3. Knight, Alva A. and David, Vernon C.: The Treatment of Venereal Lymphogranuloma with Sulfanilamide, J. A. M. A. 112:527 (February 11) 1939.

Abstract of Discussion

Dr. William C. Terry (Hamlet): In many cases we find a small irritation about the size of a bean on either side of the rectum. In those cases there is usually a mucoserous discharge. The tissue is hard and indurated around where the exit happens to be.

A proctoscopic instrument would reveal practically nothing. There is no special induration, no swelling or edema. Those things gradually increase over a period of a few months, and develop into some form of a fistula. I would like to ask Dr. Robertson what is the procedure in the early stage of those cases. Should you just wait and use various palliative treatments, or should you do a radical operation?

Dr. Donnell B. Cobb (Goldsboro): I would like to ask Dr. Robertson what solution he finds best for injecting hemorrhoids and in the treatment of anal fissures.

Does he find that injecting these anal fissures gives good results, and what does he use for that?

Dr. L. C. Ogburn (Winston-Salem): About this Gabriel's solution injection: Of what is it composed? About how much do you use? Do you inject in each quadrate of the sphincter? About how long does the effect of it last? What precautions does the patient have to take after it has been used?

Dr. Robertson: In regard to Dr. Terry's question about the condition that is found in the rectum, I take it that he is describing an early case of lymphogranuloma. My feeling is that they should never be operated on, if possible. The results will probably be very disappointing, and I think the use of sulfanilamide is the proper procedure. I would not operate on any of them until the active process is cured, and the only operation necessary then is an operation to relieve the constriction. That often has to be done.

As to the anal fissure I think the treatment for that is to relax the sphincter muscle by the injection of some relaxing solution. I use Gabriel's solution, and the composition of this is: nupercaine, ½ of 1 per cent; phenol, 1 per cent; benzyl alcohol, 10 per cent; and oil of sweet almonds to make 5 cc.

That solution is injected into the sphincter muscle and should be guided by your finger in the rectum so that you place it into the muscle. It is not necessary, as a rule, to put it in all of the four quadrates. If you have a fissure in the posterior commissure, you should put some, I should say, in the posterior half of the sphincter muscle. That is sufficient to relax it. After you have done that, the anus will open and it will be relaxed and anesthetized for a period of seven to ten days. By that time, most of the fissures are healed. If they are very deep, they may not be completely healed, but another injection may be given if necessary.

I would like to caution you against using that treatment indiscriminately, because a bad slough may result. If injected too close to the mucous membrane of the rectum, you are apt to get some infection and get a fistula instead of a fissure.

EVALUATION OF THE RESULT OF TONSILLECTOMY AND ADENOIDECTOMY

T. C. KERNS, M.D.

DURHAM

My interest in this subject has been stimulated by articles appearing both in medical literature and in the lay press condemning the wholesale removal of tonsils. Hospital records both in Europe and America show that nearly one-third of all the operations performed are for the removal of tonsils and adenoids. Many of these operations have been performed without due consideration of the symptoms requiring such operations. Often groups of children are herded together and their tonsils and adenoids removed with no examination by a laryngologist. Too many times these operations are performed by interns or physicians poorly prepared for this type of work. It is little wonder that there should come a reaction to this indiscriminate and ill advised attack upon the tonsils.

Every conscientious laryngologist would condemn such practice; yet everyone recognizes the benefits resulting from the removal of tonsils in well selected cases. I wish to report on some of the available literature in this field, and I shall quote freely from the work that has been done. Listed below are some of the accepted conditions for which tonsils and adenoids are removed:

1. Repeated attacks of tonsillitis or sore throat.
2. Cervical adenitis.
3. Nasal obstruction from adenoids (mouth breathing).
4. Repeated attacks of head colds.
5. Recurrent suppurative otitis media.
6. Failure to gain weight.
7. Rheumatism and heart disease.

Epstein(1) studied the results of tonsillectomies in 450 cases one year after the tonsils had been removed, and found that 92 per cent of the cases had had complete relief. The group showing the greatest improvement were those with cervical adenitis. Only 3 per cent of these showed no improvement. The next most satisfactory group were the

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Chairman's Address, read before the Section on Ophthalmology and Otolaryngology, Medical Society of the State of North Carolina, Pinehurst, May 14, 1940.

1. Epstein, I. M.: Factors Influencing the Results of Tonsillectomy and Adenoidectomy, Am. J. Dis. Child.

mouth breathers. Seventy-nine per cent of these were cured and only 4 per cent showed no improvement. Of those complaining of cough 73 per cent were cured, 10 per cent were improved, and 17 per cent unimproved. Head colds showed the poorest results. Of 40 children with recurrent otitis media, 36 were cured by operation.

Harold D. Smith(2) reported that in a series of 103 cases checked eight months after operation, 90.16 per cent had fewer colds; 81.96 per cent had fewer attacks of sore throat; 88.52 per cent reported improved general health; and 78.69 per cent had gained weight. All of his patients with aural involvement stated they were improved, but none were cured. Of the group with nasal obstruction 60 per cent received complete relief; 20 per cent, partial relief; and 20 per cent, no relief. There were two cases of laryngitis, neither of which was relieved.

Dr. Kaiser(3, 4) has made the most comprehensive study. In a group of 4,400 children, 2,200 had tonsil and adenoid operations and 2,200 did not. After three years he found a return of adenitis in only 5 per cent of the children operated on, as compared to 14 per cent in the control group. At the end of ten years it had increased to 7 per cent in the test group while the control group still showed 14 per cent. It would therefore seem not to prevent adenitis, but to influence its frequency.

Purulent otitis occurred in 12 to 20 per cent of the children below the age of 6. During the year following tonsillectomy only 4 per cent of the children had trouble with their ears. At the end of two years only 2 per cent and at the end of ten years 5 per cent of these children were still complaining with their ears, while among the control group 6 per cent were having the same disturbance. The incidence of otitis occurring after tonsillectomy was about half that of the control group. Mastoiditis, however, occurred about as frequently in the children who had their tonsils removed as in those who had not.

The relation of the tonsils to rheumatic manifestations was studied in these 4,400 children. These manifestations included growing pains, rheumatic fever, carditis, and chorea. Prior to operation chorea existed in about the same number of children in both groups. At the end of a ten year period more cases of chorea had developed in children who had undergone operation than in those who had not. The incidence was 1 per cent in the children operated on and 0.6 per cent in the controls. At the termination of the ten year period more cases of rheumatic fever had occurred in the control group than in the other—in 3.5 per cent of the controls, and 2.3 per cent of those who underwent operation. Growing pains occurred with equal frequency in the two groups prior to operation, but at the end of the ten year period 7.8 per cent of the children who had undergone operation and 9 per cent of those who had not were still subject to growing pains. Rheumatic carditis was more frequent in the children who had not undergone operation. At the end of the ten year period rheumatic carditis had developed in 26 of the 2,200 children on whom operation had been performed and in 30 of those who did not undergo operation.

An analysis of 600 children with rheumatic infection indicates that tonsillectomy reduces the incidence of first attacks by 33 per cent. Tonsillectomy offers the greatest protection between the ages of 5 and 10 years. Recurrent attacks of rheumatic fever occurred with equal frequency in the two classes. It would thus seem that once a rheumatic infection has taken place the removal of the tonsils offers no protection against subsequent attacks.

In general a review of the literature shows that the incidence of rheumatic heart disease in the cases of rheumatic polyarthritis is approximately 60 to 70 per cent. In a study of 108 cases Drs. Allen and Baylor of Baltimore(5) showed that in the 49 cases not showing cardiac involvement at the time of operation only 6, or 12.2 per cent, developed rheumatic heart disease subsequently.

Nephritis in children often follows an attack of tonsillitis or scarlet fever. There is overwhelming evidence that tonsils have a definite relationship to nephritis.

Infected teeth and abscesses of the gums occur twice as frequently in children whose tonsils and adenoids have not been removed.

In individual cases there is a striking

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2. Smith, Harold D.: Follow-up of Patients Eight Months After Tonsillectomy, Arch. Otolaryng. 24:488 (October) 1936.
3. Kaiser, A. D.: Results of Tonsillectomy and Adenoidectomy—2200 Cases, J. A. M. A. 95:837 (September 20) 1930.
4. Kaiser, A. D.: Relation of Tonsillectomy and Adenoidectomy to Infections in Children, Am. J. Dis. Child. 41: 568 (March) 1931.
5. Allen, W. B. and Baylor, J. W.: The Influence of Tonsillectomy and Adenoidectomy Upon the Course of Rheumatic Fever and Rheumatic Heart Disease, 108 Cases, Bull. Johns Hopkins Hosp. Vol. 63.

relationship noted between malnutrition and infected tonsils. Other factors must be considered here, but many children show remarkable improvement in nutrition within the first year after tonsillectomy. In early adult life, however, there is little difference between the nutrition of individuals who have had their tonsils removed and those who have not.

The question of when tonsils and adenoids should be removed requires considerable study and thought on the part of both the laryngologist and the pediatrician. It is certain that the tonsils in infancy and early childhood are a part of the defensive mechanism of the body, and to interfere with this mechanism may cripple the child for life. On the other hand, failure to operate when the condition warrants it may be even more unfortunate. Observers have thought that hyperplasia of the tonsils was associated with colds; changes in the crypts, with tonsillitis; and interstitial changes, with rheumatism. Frequently an examiner classifies tonsils as abnormal in children with symptoms that would be regarded as normal in children without symptoms.

Dean(6) says that the apparently normal tonsils that he had removed because of a systemic disease have been examined microscopically, and in every instance chronic infection involving the epithelium was found deep down in the crypts. The evidence of infection in the crypts is a leukocytic infiltration of the epithelial and underlying lymphoid tissue, with some destruction of the protective epithelium. "I cannot say that any tonsil is not the seat of chronic infection except after removal and microscopic study." "Study in the laboratory has shown definite evidence of infection in the most innocent looking tonsils."

Summary

1. Tonsillectomy is not a panacea for all the ills of the human body.
2. Probably too many tonsils have been removed, and certainly too many poor tonsillectomies have been done. This may account for poor results where focal infection is a question. We do not know how much infection a small piece of tonsil left in the throat may carry.
3. The wholesale removal of tonsils is condemned.
4. Tonsillectomy is of definite value in adenitis, tonsillitis, nasal obstruction, failure to gain weight, otitis media, and as a preventive of rheumatism and endocarditis.

EMERGENCY TREATMENT OF ACUTE HEART FAILURE IN GENERAL PRACTICE

Roscoe D. McMillan, M.D.

Red Springs

In the presence of heart failure the clinician must attempt to establish, if possible, the underlying cause and the type of failure which is present. Inability to evaluate properly the cardiac state and the abnormalities of rhythm leads to grave mistakes in diagnosis, often resulting in cardiac neuroses that may serve to incapacitate the patient.

In emergency cardiac cases it may not be possible to determine the underlying cause. In such conditions the emergency treatment which is indicated by the evident clinical manifestations must be instituted. Such treatment must be prompt to be life saving. However, when the time permits, a brief history of the condition may be obtained from the patient or his relatives. Valuable information as to possible underlying clinical factors responsible for the acute attack may be obtained in the history. Such apparently simple facts as those detailing the onset and progress of the acute attack may give information of inestimable value with specific clues as to the required treatment.

The physical examination of the heart in cardiac failure is a *sine qua non* of diagnosis. Such important facts as the rate, rhythm, and character of the heart sounds should be carefully noted. Disturbances of mechanism indicating heart block, auricular fibrillation or flutter may be evident. When possible a general examination of the patient should be conducted, with particular regard to other signs of cardiac failure, such as orthopnea, enlarged liver, ascites and peripheral edema or anasarca. For the purpose of classification, acute cardiac failures may be divided

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6. Dean, L. W.: The Tonsils, Their Function and Indications of Their Removal, J. A. M. A. 103:1044 (October) 1934.

Read before the Section on the General Practice of Medicine and Surgery, Medical Society of the State of North Carolina, Pinehurst, May 15, 1940.

into those associated with the infectious diseases such as pneumonia, diphtheria, and sepsis, and those occurring in the course of thyrotoxicosis, syphilis, arteriosclerosis, hypertension and rheumatic heart disease. The clinical cardiac manifestations in the latter diseases may be variable, seldom conforming to a constant pattern, and hence seldom indicative of the underlying pathologic condition.

The provoking causes of heart failure are multiple. Acute infections sometimes mild in character, such as a grippal or a respiratory infection may serve to initiate a break in compensation in a heart previously diseased but well compensated. Recurrent rheumatic infections may undermine the integrity of the heart muscles, as will repeated carditis with tonsillitis occurring once or twice a year. Arrhythmias are often the determining causes of acute cardiac failure. The postoperative cardiac failure is often transient and may be associated with pulmonary embolism. Extensive embolism may result in immediate death. Extreme emotional states—excitement, grief or sorrow—may play significant roles in cardiac failure.

The acute heart failure of the infectious diseases may respond to emergency treatment, but since it occurs after severe and prolonged toxemia the response may be unsatisfactory. The most important phase in the therapy of this type of cardiac disturbance is the prevention of serious cardiac accidents. The heart should be carefully watched during the acute stages of the disease so that, when signs of failure appear, proper therapy may be instituted early. Prevention of cardiac disability in the infectious diseases is far more important than the treatment of the cardiac emergency.

In the diagnosis and evaluation of cardiac states associated with failure it may be well to mention some clinical conditions which, in the intensity of cardiac manifestations, may simulate acute heart failure. Chief among them is pulmonary embolism with infarct, presenting a symptom complex that closely simulates coronary thrombosis, with many of the dramatic phases of the latter condition. Cardiac deterioration in pulmonary infarct may be rapid and startling. The symptomatology of pulmonary embolism bears so striking a resemblance to that of coronary thrombosis that it may be differentiated only by means of the electrocardiogram. Sufficient time must elapse to produce the changes which will clarify the diagnosis. Other conditions which may cause difficulties in diagnosis are spontaneous pneumothorax, inducing severe cardiorespiratory symptoms; and massive collapse or atelectasis, producing a clinical picture often confused with true heart disease because of the respiratory difficulty and pleural effusion. The last named condition is often characterized by a slowly developing dyspnea chiefly on exertion, closely simulating heart failure.

General Symptoms and Signs

The symptoms and signs of cardiac failure may be grouped for purposes of convenience into those occurring with left ventricular failure and those occurring with right ventricular failure. In left ventricular failure, cardiac asthma or paroxysmal dyspnea with edema of the lungs is a frequent sign, alone or with Cheyne-Stokes respiration. The cardiac rhythm in this type of failure may be of the gallop type, or any of the arrhythmias may be present. Pulmonary congestion is frequent and in this condition the x-rays may aid in diagnosis.

In the right ventricular failure dyspnea is likewise common but is more apt to be of the simple type. The liver as a rule is enlarged and may be tender and pulsating. Hydrothorax, frequently unilateral, is common. Dilation of the right ventricle and right auricle produces dullness to percussion at the lower end of the sternum. This dilation may also be determined by means of x-ray examination. Generalized edema with marked gain in weight may be present early in the failure. A gradual unexplained weight gain may be the forerunner of a break in compensation. Jaundice is not uncommon. The finding of albumin and erythrocytes in the urine indicates the existence of a renal congestion.

In addition to the foregoing symptoms and signs of cardiac failure others of variable frequency and significance may be added.

1. Pallor may be present more frequently than cyanosis.
2. Precordial discomfort may or may not be present. When present and related to exercise, it may have a definite significance.
3. Palpitation is frequently present without a clue as to the underlying associated rhythm.
4. Tachycardia is common but bradycardia may occur at times with disturbance of the sinus node or the bundle of His.

5. Heart measurements may be greater than normal, as evidence of hypertrophy or dilatation in true heart disease.

6. Heart sounds may be variable in character. They are usually weak and may be irregular. The type of arrhythmia must be determined. Murmurs vary with the type of disease. A systolic murmur at the apex is most frequent.

7. Gallop rhythm, as mentioned, is common. Heart block may appear with involvement of the conduction system.

8. Lungs may show evidence of basal congestion with rales and impaired resonance. Dullness may be found when fluid is present in the pleural cavity. The respiratory rate is usually increased.

9. Fever and leukocytosis may coexist with infectious processes. Both are found consistently with coronary thrombosis.

I hope it is clear that I am discussing cardiac failure and not failure of the peripheral circulation. Peripheral failure produces the symptoms and signs of shock and collapse, including pallor, perspiration, cold skin, weak heart sounds, rapid thready pulse and low blood pressure. These phenomena are seen occasionally in surgical cases, in severe hemorrhage, in dehydration, in coronary thrombosis, in arterial embolism and in other conditions which for any reason produce a sudden decrease in the volume of the circulating blood or a sudden collapse of the vascular bed. In certain of these cases the heart itself may be entirely normal in its capacity to function properly, but the vascular system fails to return a normal volume of blood to the heart.

Among the symptoms of heart failure breathlessness stands out preeminently. The dyspnea may of itself serve to call attention to an impending heart failure. It may manifest itself as the simple or exercise type evident on moderately strenuous exertion such as walking fast or climbing stairs. It may or may not be accompanied by a sensation of precordial pressure or pain. Exercise is apt to produce cardiac palpitation and dyspnea disappearing with rest. Such a complex symptomatology may be present for months before more evident signs of failure appear. Another form of dyspnea may occur as a paroxysmal or nocturnal dyspnea, often called cardiac asthma. Accompanying this is a pulmonary edema present in varying degrees. Probably in no cardiac emergency does death seem more instantly impending. The onset of the attack is as a rule sudden, occurring during sleep or after some exertion such as coughing. The patient often awakens gasping for breath and conscious of the rapid heart action. Precordial pain is frequently present and sweating is a distressing symptom. Cough with varying amounts of sputum is present with edema. The attack is at times accompanied and aggravated by severe fright. The mechanism of the attacks is probably an acute left ventricular failure following sudden elevation of blood pressure occurring during sleep as a result of exciting dreams, urinary bladder discomfort or other sensory stimuli. This is the so called "back pressure theory" of pulmonary congestion.

Another type of dyspnea which is important, extremely distressing, and often unrecognized as a sign of cardiac failure is the Cheyne-Stokes respiration. This type of dyspnea occurs frequently in heart disease, being found most often in arteriosclerotic and hypertensive states. It may be an index of left ventricular failure in these two conditions. The duration of the periods of apnea varies from ten to forty seconds. The apnea is more disturbing when nocturnal. The patient often awakens during the long periods of apnea to find himself struggling for breath. The fear induced by this attack prevents sleep, and so the element of prolonged exhaustion further embarrasses the myocardium and reduces the cardiac reserve. The foregoing forms of dyspnea, from the simplest or exercise type to the complex, may be valuable in determining the extent and severity of cardiac disability. Immediate understanding of the significance of this symptom, particularly in its more serious manifestations, will result in prompt and life saving therapy. The essential treatment of acute heart failure depends, as has been said, on the factors underlying the failure and also on the clinical expressions of the failure. It is necessary then, in any failure, to determine whether the heart action is arrhythmic or rhythmic and whether or not edema exists. The location of the edema, whether general or pulmonary, may be of importance. If the heart is arrhythmic, the character of the arrhythmia should be determined, instrumental aids being used for more accurate determination when possible. An electrocardiogram may reveal not only the arrhythmia but also the character of any underlying myocardial changes.

General Principles of Treatment

With the foregoing differentiations and clinical determinations in mind one may proceed to the consideration of certain general principles of treatment as applied to acute cardiac failure:

1. Rest in bed should be absolute. It presupposes adequate and proper nursing care. In simple congestive heart failure with normal rhythm, rest in bed may be modified to prevent formation of venous thrombi, which may develop as a result of the marked slowing of the circulation.

2. Sedation should be obtained by morphine given subcutaneously or intravenously in adequate doses. In the acute stages of heart failure, rest is most important. Dilaudid hydrochloride may be used in doses of 1/64 to 1/32 of a grain. Respiratory depression may be controlled by using caffeine or atropine or a respiratory stimulant such as lobeline or coramine. Barbiturates may well serve the purpose.

3. When cardiac failure is accompanied by arrhythmia the tachycardia should be treated, and for this purpose digitalis or quinidine should be used in adequate doses. When sinus arrhythmia is present with cardiac failure the effect of absolute rest in restoring integrity may be determined before digitalis is used. Digitalis has its most pronounced effect in cardiac failure. In circulatory failure the effect of digitalis is less pronounced and may even be negative.

To be more specific concerning the subject under discussion I am listing three types of cardiac diseases:

1. Acute congestive myocardial failure
2. Cardiac pain
3. Abnormal heart action.

Acute myocardial failure is one of the most commonly seen conditions demanding emergency treatment. In patients with either right or left ventricular failure dyspnea, orthopnea and air hunger appear. The associated pulmonary congestion may give rise to a cough productive of profuse frothy blood-tinged sputum. Soon circulatory collapse occurs with pallor or cyanosis, marked perspiration and rapid feeble radial pulse. The most important emergency measure is morphine sulphate, ¼ gr., repeated in fifteen minutes if relief has not been obtained. If the morphine is not effective in abolishing the attack aminophylline 1/100 gr. in 20 cc. of physiologic sodium chloride given intravenously over a five minute period, or sometimes venesection of 300 to 500 cc. of blood is frequently followed by striking improvement. Sometimes, particularly in right ventricular failure, gastric and abdominal flatulence, venous engorgement, enlargement and tenderness of liver, ascites, edema of the extremities and at times anasarca and hydrothorax are present. When a rapid elimination of the edema is necessary diuretics play an important role. I prefer the mercurial diuretics, either mercupurin or salyrgan. They may be given intramuscularly, intravenously, rectally as suppositories and intraperitoneally diluted with ascitic fluid. The dose varies from 0.5 to 2 cc., and the administration may be daily or every three to five days depending on the severity of the condition and the result obtained with a given dose. The slow intravenous administration of 50 to 100 cc. of a hypertonic solution of dextrose has value in some cases in helping the failing heart muscles to replenish lost glycogen. In extreme cases of failure involving either the left or the right side or both sides of the heart when the circulation is greatly embarrassed, strophanthin should be administered intravenously, 1/100 gr., provided the patient has not been properly digitalized. Strophanthin exerts an action on the heart similar to that produced by digitalis; but unlike digitalis it acts almost at once. Its full effect is produced in about one hour and is prolonged for from twelve to twenty-four hours. The initial dose of strophanthin may be followed by two subsequent doses at intervals of from eight to twelve hours.

Caffeine sodium benzoate, 1 to 3 grains, may be given intramuscularly or subcutaneously every three to four hours. If obtainable oxygen inhalations are usually of great benefit. Glyceryl trinitrate may be of value.

Digitalis has no place in the treatment of the acute attack because its action is too slow to combat an emergency.

After the acute stage has subsided digitalis is the most useful drug in the treatment of congestive myocardiac failure; it is especially efficacious in those cases in which auricular fibrillation with a high ventricular rate is also present. However, it has been demonstrated adequately that very satisfactory results can be obtained in cases of cardiac decompensation with regular rhythm.

Cardiac Pain

The most significant cardiac pain is that of angina pectoris and coronary thrombosis. Seneca wrote: "To have any other malady is to be sick—to have either of these is to be dying." Although of similar character in onset, location and distribution, the treatment of the two is different. The nitrites, theobromine sodium salicylate, and aminophylline are the drugs of choice for angina pectoris. Of the nitrites, nitroglycerine and amyl nitrite are the quickest and shortest in action and, therefore, useful in the acute attack.

Coronary thrombosis with extensive cardiac infarction may result in immediate death from cardiac failure. If death is not immediate, the cardiac manifestations may be severe and if not properly treated may terminate in failure. The general reaction to the thrombosis may be striking, with all the signs of severe shock, including sudden reduction of blood pressure, tachycardia, and interference with cardiac and peripheral circulation. The mechanism of the heart may be regular or irregular.

The treatment of the acute coronary thrombosis, with which acute cardiac failure is always potentially associated, consists in rest, which must be immediate and absolute. Morphine should be used in large doses for relief of pain. Vasodilators should be used, and for this purpose theobromine with sodium salicylate (diuretin) or aminophylline is most effective. Aminophylline, 4-7½ gr. intravenously is frequently attended by more prompt and greater relief than is morphine sulphate. It should be given slowly; if the pain recurs after a few hours it is permissible to repeat the dosage. Oxygen inhalations may be of value in the first twelve hours after the attack.

Abnormal Rhythm or Rate

From the standpoint of general practice the following arrhythmias are the most important, as they can usually be recognized at the bedside and often are amenable to treatment: ventricular extrasystole, auricular fibrillation, auricular flutter, paroxysmal auricular tachycardia, ventricular tachycardia, and complete heart block. Extrasystoles, unless frequent and accompanied by palpitation or precardiac discomfort, rarely call for treatment. Very rarely it may be necessary to use quinidine sulphate or digitalis in trying to stop them. If the extrasystoles first appear while the patient is under digitalization, they probably signify the digitalis effect.

Auricular fibrillation and auricular flutter may be discussed together, because digitalis and quinidine sulphate are useful in both instances.

In the treatment of auricular fibrillation quinidine may be of value in restoring rhythm; however, all patients with auricular fibrillation should not be given quinidine sulphate, especially those with fibrillation of long standing. Quinidine acts best in the case of short duration, without congestive heart failure, and with a ventricular rate under 110. The auricular fibrillation of thyrogenic origin is especially suitable for quinidine sulphate therapy. Frequently it is advisable, especially in rapid fibrillation, to digitalize the patient before giving quinidine sulphate. Digitalization and quinidine sulphate are advisable in auricular flutter, and return to normal rhythm may be expected.

Many of the cardiac arrhythmias, when severe, bring on acute failure; of these, perhaps the most common are auricular paroxysmal tachycardia. If mechanical measures such as vagal or ocular pressure do not stop an attack of paroxysmal tachycardia, mecholyl should be administered subcutaneously. The dosage varies with age and weights of the patients, 1/6-1/3 gr. being sufficient for the young and 1/2-1 gr. being necessary for elderly persons. If the initial dose does not check the rate, a second dose may be given after a lapse of twenty or thirty minutes. The injection is followed by a sudden sensation of warmth in the face. Salivation, profuse perspiration, nausea and vomiting are perhaps the first symptoms of an overdose. The patient should be lying down during the injection and for fifteen minutes afterwards. An asthmatic attack seems to be precipitated in susceptible individuals, and momentary heart block as well as dyspnea and substernal pain has been noted in a few instances. These symptoms, if alarming, can be instantly stopped by the intravenous administration of atropine sulphate, 1/100-1/50 gr. In all cases of either auricular or ventricular tachycardia in which mecholyl is either contraindicated or ineffective, quinidine sulphate should be given in large doses—3-6 gr. given by mouth for six or more doses. However, when large doses are to be used the patient should first be tested for quinidine idiosyncrasy.

Avoid the use of digitalis, for it may convert the condition into the more dangerous ventricular fibrillation.

Heart Block

As an emergency measure in the treatment of Adams-Stokes syndrome epinephrine hydrochloride 5 to 15 minims of 1:1000 solution is given hypodermically, or into the heart. Ephedrine sulphate 3/8 gr. by mouth two or three times daily, may help in preventing severe or frequent attacks. Barium chloride 1/2 gr. by mouth, and atropine sulphate 1/100-1/50 gr. have been used to control Adams-Stokes seizure, but they have not produced as uniform results as has epinephrine.

Summary

Most important is the necessity for proper diagnosis of the type of existing heart failure. It is absolutely impossible to group all cases of acute heart failure together and so to institute one type of treatment. Not many cases of acute failure require digitalis; in some cases the use of this drug may be dangerous.

Fortunately most of the drugs used in cardiac failure are now available in sterile solution in single dose ampules, convenient for immediate hypodermic administration. These should always be in the kit of every physician, and should be used as indicated. Treatment of acute heart failure should never be discontinued because of apparent lack of response, for restoration of the heart muscles to a compensated state is often obtained when least expected.

Abstract of Discussion

Dr. L. A. Crowell (Lincolnton): I would like to discuss this paper briefly from the standpoint of digitalis.

I have long since come to have a wholesome respect for digitalis. I think there is a great danger of poisoning people with digitalis, and in situations such as have been under discussion here—the handling of acute cardiac conditions—there is a danger of giving the digitalis long after the acute phase is over, to the extent of intoxication.

It has been my observation that the signs and symptoms of digitalis overaction are not very generally known, but I cannot go into that. What I do want to state is this: A rule I have followed for about eight or ten years in giving digitalis is to secure in the body a concentration of not more than 300 minims of tincture or its equivalent for a 150 pound individual. I believe when you give more than that, you get pretty near the zone of toxicity.

Dr. Seavy Highsmith (Fayetteville): We all agree that rest is the most important part in the treatment of beginning heart failure and after an acute attack. Rest, after the immediate pain is relieved, is of all treatments, the one which will do the patient the most good.

There is no definite opinion as to how long the patient should be kept in bed after an attack of coronary occlusion or thrombosis. The usual period is from three to four months, and after the patient begins to have comfort, lying in bed is very tedious.

After he does get up and about, the patient should be instructed to take periodic rest of at least an hour every afternoon. The matter of diet in those heart conditions is very important, particularly if there is a hypertension. The diet of the patient should be selected so it will allow his blood pressure to remain within bounds. A good many of those patients are heavy eaters. It is important to instruct the patient as to the danger of a heavy meal, or an indigestible meal. That will very frequently bring on another acute attack.

Dr. W. C. Highsmith (Fayetteville): In the treatment of acute cardiac decompensation with edema you will sometimes get a quick and dramatic response to salyrgan or to mercupurin intravenously. We use these drugs a great deal at our hospital and I have been using them since about 1932. I do not believe I have had any fatalities from them yet. Of course, I always like a run of urine before using either, but I think that any practitioner should have in his bag one or more ampules of salyrgan or mercupurin.

Sometimes you will find an acute cardiac failure with edema, in which just starvation for twenty-four or thirty-six hours with, of course, digitalis and morphine, will bring about diuretic response.

Dr. D. S. Currie (Parkton): I would like to ask Dr. McMillan about the position in which he would have his patients lie in bed, especially with reference to the aged and to the young. Does this have anything to do with the patient's recovery?

Chairman Jones: I would like to ask a question myself, and that is about the role of vitamins in the treatment of this condition.

We have had two cases of coronary thrombosis which we treated with heavy doses of Vitamin B. What is your opinion of that therapy?

Dr. McMillan: Mr. Chairman, in answer to Dr. Currie's question about the length of time in bed and the position.

I feel that all patients with heart failure should have absolute rest. In a case of coronary thrombosis, I feel that eleven weeks is the shortest time that you can possibly expect any absorption of trauma. I make it a rule to keep every patient that I know has coronary thrombosis absolutely in bed for eleven weeks or even longer.

Aged patients, of course, we turn from side to side.

In answer to Dr. Jones's question, I have had no experience whatever with vitamins. I have thought of them and wanted to try them, but I have had no experience whatever.

The Treatment of Cardiovascular Syphilis.—The former pessimism regarding the treatment of cardiovascular syphilis was due in part to the sudden deaths or rapid deterioration which not infrequently followed vigorous arsenical therapy. The more favorable results of recent years have been attained by utilizing iodides and the heavy metals as the main basis of therapy. — Herrman L. Blumgart, M.D.: The Detection and Treatment of Cardiovascular Syphilis, New England J. Med. 223:444 (September 19) 1940.

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THE SOUTHERN MEDICAL ASSOCIATION

The attendance upon the thirty-fourth annual session of the Southern Medical Association, held in Louisville November 12-15, was quite gratifying. There were registered 2043 physicians, 529 ladies, and enough students, nurses, exhibitors, and miscellaneous visitors to make the total registration 4062.

The session was saddened by the death of the President-Elect, Dr. Quitman U. Newell, of St. Louis, on Monday, November 4—just ten days before he would have been inducted into the presidency.

North Carolina was particularly honored in this meeting. In another editorial notice is given to the election of Dr. Ringer as President and Dr. Ham McKay as Chairman of the Council. Among North Carolina doctors who took part in the program were Drs. William M. Nicholson, Vincent E. Moseley, Douglas H. Sprunt, Wiley D. Forbus, June U. Gunter, Susan C. Dees, Lenox D. Baker, Edwin T. Alyea, and Robert Randolph Jones, Jr., of Durham; Dr. Samuel F. Ravenel of Greensboro; Dr. Donnell B. Cobb of Goldsboro; Drs. Oren Moore and William A. Hamer of Charlotte; Dr. Arthur C. Ambler of Asheville; and Dr. George M. Cooper of Raleigh. On the program of the American Society of Tropical Medicine, meeting at the same time, were Dr. D. F. Milam of Chapel Hill and Dr. Donald S. Martin of Durham.

That the visitors to this meeting made a good impression upon their host city is evidenced by the following editorial tribute from the *Louisville Courier Journal*, entitled "Doctors' Conventions are Different":

"The southern doctor is a gentleman and a scholar.

"This fact was impressed on Louisvillians by the convention of the Southern Medical Association which ended yesterday.

"With few exceptions conventions are pretty much standardized these days. The program consists of pleas for co-operation, speeches citing the need of legislation favoring the convening group, a resolution which says, in effect, tax the other fellow. There is a banquet, reunion, a dance, much drinking. The group's secretary and one or two other dependable members do most of the work.

"The doctors were different. Their convention was more like a condensed post-graduate course in medicine. There was a sharing of professional knowledge from which not only doctors but laymen will benefit."

* * * *

NORTH CAROLINA HONORED BY THE SOUTHERN MEDICAL ASSOCIATION

The Southern Medical Association, in its thirty-fourth annual session at Louisville, November 12-15, signally honored two members of the Medical Society of the State of North Carolina. Dr. Paul H. Ringer, of Asheville, was elected President, and Dr. Hamilton W. McKay, of Charlotte, was made Chairman of the Council. Both these men are too well known to need any introduction to the readers of the NORTH CAROLINA MEDICAL JOURNAL.

Dr. Ringer was president of our State Medical Society and is a member of the Editorial Board of the NORTH CAROLINA MEDICAL JOURNAL. He is also a member of the American Association of Thoracic Surgery, the American College of Physicians, the American College of Chest Physicians, the National Tuberculosis Association, the American Clinical and Climatological Association, and of various other organizations. It is quite a coincidence that the last North Carolina doctor elected President of the Southern Medical Association, in 1923, was the late

Dr. Charles L. Minor, with whom Dr. Ringer was associated for many years.

Dr. McKay was on the last Board of Medical Examiners. He is a member of the American Urological Association, the American College of Surgeons, the Southern Surgical Association and other organizations. His service on the Council of the Southern Medical Association is recognized by his election as its Chairman.

The NORTH CAROLINA MEDICAL JOURNAL extends its heartiest congratulations to these distinguished members of our State Society; and also congratulates the Southern Medical Association upon its good judgment in selecting leaders for 1941.

* * * *

PRESIDENT ROOSEVELT OPPOSES SOCIALIZED MEDICINE

On October 31, just on the eve of the national election, President Franklin D. Roosevelt made a notable statement. In dedicating the National Institute of Health building at Bethesda, Maryland, he said:

"Neither the American people nor their government intend to socialize medical practice any more than they plan to socialize industry. In American life the family doctor, the general practitioner, performs a service which we rely upon and trust.

"No one has a greater appreciation than I of the skill and self sacrifice of the medical profession. And there can be no substitute for the personal relationship between doctor and patient which is a characteristic and a source of strength of medical practice in our land."

Remembering the National Health Conference of July, 1938, the illegal loan made by the government to the HOLC in order to finance the Group Health Insurance plan, the Wagner Health Bill, the suit brought against the American Medical Association by the government's Department of Justice, and the steady stream of propaganda from Washington obviously intended to smear the medical profession, the cynical mind might have cause to ask of the present federal government:

"Perhaps it were wise to dissemble your love,
"But — why should you kick me downstairs?"

Since, however, the suit against the A.M.A. has been indefinitely postponed, and since the Wagner Bill did not get to the floor of the Senate, and since we are all trying to unite in a national defense program, let us medical men take our President's word at its face value, and agree to let bygones be bygones. With the emergency now confronting the nation, there is little danger, for the time being at least, that the government will add the cost of a political medical scheme to the tremendous burden of the defense program.

* * * *

"A HORNET'S NEST?"

An editorial in the *New York State Journal of Medicine* for November 15 says that "The recent formation in the Westchester County Medical Society of a general practitioners' section marks the beginning of a movement which should have every encouragement and stimulation."

While our colleague does not say just how much territory is covered by this statement, the NORTH CAROLINA MEDICAL JOURNAL would like to recall, in order to keep history straight, that a general practitioners' section of the Medical Society of the State of North Carolina was organized in 1937, and that it has had the largest attendance of any section of the society. To go still further back, Dr. J. M. Northington, editor of *Southern Medicine and Surgery*, established a Department of General Practice in that journal in July, 1931.

The New York Journal thinks that such an organization "should have many of the characteristics of a hornet's nest", but rather hopes that instead of stinging one another, the group will develop "a few leaders to direct . . . some well-planned and judiciously executed forays into the camps of the haughty surgeons, the snooty specialists, the public health picnickers, and the welfare weevils."

The specialists of Westchester County may be comforted by knowing that not one fist fight has developed as a result of the general practitioners' section of the North Carolina society. Its members have not stung one another any more than was necessary to stimulate better work; the only sting felt by the specialists is envy of the excellent programs produced by the general practitioners.

GONORRHEA AND THE SULFONAMIDES

In *The Medical World* for November, the "guest editor", Dr. P. S. Pelouze, has an excellent discussion of the comparative merits of the sulfonamides in the treatment of gonorrhea. Dr. Pelouze thinks that sulfanilamide should be abandoned in favor of the later compounds. Its cure rate is only 30 per cent, as against 85 to 90 per cent for sulfapyridine and sulfathiazole, and a high proportion of patients treated with sulfanilamide become symptomless carriers "who can transmit the disease just as surely as the known treatment failures."

Sulfapyridine and sulfathiazole both have cure rates of 85 to 90 per cent, but sulfathiazole is preferable because it is so much less toxic. "There is no need for the giving of more than 45 grains a day nor for its continuation beyond a ten-day period. Indeed, there is much to suggest that one week's medication is sufficient."

In spite of the brilliant success of these new drugs, however, Dr. Pelouze urges "a bit of skepticism regarding real cure in every case". He advises that every patient be strongly urged "to avoid unprotected sexual intercourse for several months" after treatment, no matter how complete seems the cure.

* * * *

FLAMING YOUTH OR FOOLISH MATURITY?

The Christmas season is approaching, and with it the annual round of holiday festivities for the young folks. These occasions are usually characterized by unreasonably late hours, and often occasion severe criticism of the younger generation. This criticism of youth, incidentally, dates back to antiquity. One of the Greek comedians, writing several centuries before Christ, makes one of his characters say:

"Come listen to the good old days, when
  children, strange to tell,
"Were seen, not heard, lived simple lives
  —in short, were brought up well."

It is doubtful, however, that the young things—certainly those of high school age—are as much to blame for the unreasonable hours they keep as are their elders. It is the parents—usually the mothers—who plan the parties, and who set the hours. Often the youngsters themselves will admit that they wish they did not have to stay up so late, but that they must do so because all the other young people do.

During the Christmas holidays last year in Winston-Salem numbers of children not yet in their teens were invited to a dance from nine to one. The festivities began at what should have been their bedtime. Most of these parties are given for the young people home from school, and after two weeks of almost nightly dissipation they return to school exhausted. In most schools mid-year examinations follow hard upon the Christmas holidays. The students are in no condition, physically or mentally, to face this ordeal, and they are too apt to learn the dangerous temporary boost which caffeine or benzedrine will give.

There is, of course, little that we doctors can do about it, so long as it is fashionable to make endurance contests out of so-called social recreations; but we can at least protest as diplomatically as possible to the mothers, who are primarily responsible.

THE PLATFORM OF THE AMERICAN MEDICAL ASSOCIATION

The American Medical Association advocates:

1. The establishment of an agency of the federal government under which shall be coordinated and administered all medical and health functions of the federal government exclusive of those of the Army and Navy.

2. The allotment of such funds as the Congress may make available to any state in actual need, for the prevention of disease, the promotion of health and the care of the sick on proof of such need.

3. The principle that the care of the public health and the provision of medical service to the sick is primarily a local responsibility.

4. The development of a mechanism for meeting the needs of expansion of preventive medical services with local determination of needs and local control of administration.

5. The extension of medical care for the indigent and the medically indigent with local determination of needs and local control of administration.

6. In the extension of medical services to all the people, the utmost utilization of qualified medical and hospital facilities already established.

7. The continued development of the private practice of medicine, subject to such changes as may be necessary to maintain the quality of medical services and to increase their availability.

8. Expansion of public health and medical services consistent with the American system of democracy.

CASE REPORTS

CLINICO-PATHOLOGICAL CONFERENCE

City Memorial Hospital

Winston-Salem

Presentation of Case

A 40 year old white woman entered the hospital complaining of cough, dyspnea and pain in the right side of the chest.

Because of the patient's great discomfort the history was obtained from her husband. Six weeks before admission the patient had been awakened in the middle of the night by a slight hemorrhage from the lungs, which persisted during the next day as streaking of the sputum. The next night she had a similar hemorrhage. She went to the County Tuberculosis Sanatorium for examination and was told that she did not have tuberculosis. From then until eight days before admission she was free of symptoms. At this time she began to have a sharp stabbing pain in the right side of the chest. This lasted two days and kept her from her work. She was then able to work one day, but the pain returned and became increasingly severe. On the day before admission it was associated with nausea, vomiting and extreme dyspnea.

The patient had had a productive cough for "some time." Five years before the present illness she had pleurisy, and was told that she had a mild pneumonia. She was sick about one week at this time. The rest of her past history and the family history are not contributory.

Physical examination revealed a medium-sized white woman lying in bed breathing with great difficulty and in severe pain. The naso-pharynx and tonsillar pillars were reddened. The tonsils were absent. On the right side of the chest there was limitation of the respiratory movements. The breath sounds were limited in the back from the third interspace downward, and in front were distant or absent. There was dullness from the fourth dorsal spine posteriorly and the third rib anteriorly, to the base of the lungs. The left chest was hyper-resonant. No rales were present on either side. The cardiac dullness was shifted slightly to the left. The apex beat was in the fifth interspace 4½ inches from the midsternal line. No murmurs were present. The blood pressure was 100 systolic and 70 diastolic. The abdomen was slightly distended and tympanitic, but was not tender, and no masses were palpable. The temperature was 102.4 F., the pulse, 150; the respirations, 28.

The urine examination was negative. Examination of the blood showed a red count of 4,710,000 with 13½ Gm. of hemoglobin. The white count was 14,150 with 38 per cent segmenters, 36 per cent stabs, 10 per cent juveniles, 11 per cent lymphocytes and 5 per cent monocytes. An x-ray of the chest taken the day of admission showed "the left pulmonic field clear and apparently normal. The heart shadow is normal. On the right there is a marked density involving the outer half of the pulmonic field and extending from the apex to the diaphragm. This is sharply defined along the inner border." The next day the patient was extremely uncomfortable. She complained of great pain in the right side, and tried unsuccessfully to vomit. There was diminution of breath sounds and dullness throughout the right chest except at the apex. The temperature was 100.4 F. An x-ray taken on this day in the lateral position showed "the density previously described to be in the anterior portion of the chest." On the third hospital day the chest was aspirated and a small amount of bloody fluid removed. On the fourth hospital day the anterior portion of the chest was aspirated and 100 cc. of foul smelling pus was obtained. On the fifth hospital day an incision was made between the fifth and sixth ribs in the right anterior axillary line and a catheter inserted. The temperature at this time was 102 F. During the next two days the temperature gradually came down as far as 99.6 F., but on the ninth hospital day it reached 103 F. The pulse was 140. On the thirteenth hospital day a rib resection was performed. The patient's temperature remained the same on the next day, but the following day the temperature rose to 105.8 F., and the patient expired.

Differential Diagnosis

E. A. MacMillan, M. D.

We have here the sudden onset of hemoptysis in a 40 year old white woman who had had a productive cough for "some time". Since she had had a thorough examination at the Forsyth County Sanatorium within a few days of the onset of this condition, and was found to present no evidence of pulmonary tuberculosis, the hemoptysis was probably of non-tuberculous origin. This is assuming infallibility in the technique and judgment of Dr. Yoder and his staff, but we have been led to expect work of this calibre from them.

This hemorrhage was followed by a period of eight days in which there were no symptoms. It may be assumed that inasmuch as the patient was not informed of the presence of pneumonic congestion when she was examined at the sanatorium, this condition may also be considered as extremely unlikely. The onset of sharp, stabbing pain in the right side of the chest on the eighth day after the onset of hemoptysis suggests involvement of the pleura. Progression from this to dyspnea, nausea and vomiting indicates that a pleural effusion was developing. Limitation of respiratory movements, dullness, and absence of breath sounds over the lower right chest, with a shift of the cardiac dullness to the left, all point toward an effusion in the right chest. There was an increase of the white blood cells with a marked shift to the left, 36 per cent stabs and 10 per cent juveniles being present. The temperature was elevated. The x-ray findings showed a density involving the outer half of the right chest. Operation revealed the expected purulent pleural effusion. There seemed to be some temporary improvement following the rib resection, but this was not sustained and the patient expired in hyperpyrexia.

The events which succeeded the hemoptysis in this case seem moderately clear. Certainly there was some infectious process active in the lung which apparently resulted in the erosion of a blood vessel, with resulting gross hemorrhage. The blood gained access to one of the bronchial divisions, and hemoptysis resulted. The fact that the patient had suffered from a chronic cough suggests strongly, in the light of the events which followed, that there had been some degree of bronchiectasis present. Tuberculosis we consider ruled out by the negative x-ray findings. It may not be entirely safe to do this, but it seems highly unlikely that a tuberculous lesion sufficient to cause gross hemoptysis should not have been discovered by a complete examination. Pulmonary abscess must be considered as initiating this fatal train of events, but there were no prodromal symptoms mentioned in the history to suggest this. It is possible, though unlikely, that there may have been a small patch of bronchopneumonia present as the initiating lesion. A rare possibility which must be considered is echinococcus disease. Pulmonary aspergillosis must be mentioned because of the fact that it occasionally begins with frank hemoptysis.

Clinical Diagnosis

Empyema with resulting pneumonia.

Dr. E. A. MacMillan's Diagnosis

Massive right empyema.
Chronic bronchiectasis.

Anatomical Diagnosis

Bronchiectasis, both lower lobes.
Rupture of bronchus at base of right lower lobe into pleural cavity.
Empyema, right.
Surgical drainage of empyema with rib resection.

Pathological Discussion

The postmortem examination showed air but no fluid in the right pleural cavity. The right lung was adherent to the thoracic wall over the posterior portion of the lower lobe. It was collapsed and covered by a thick fibrinous exudate. The bronchi in both lower lobes were uniformly dilated throughout their entire length, were thin-walled and contained a slight amount of mucopurulent material. A large bronchus leading to the posterior portion of the right lower lobe communicated with the pleural cavity on the diaphragmatic surface of the lung. The lower portion of this bronchus was surrounded by a considerable amount of inflammatory reaction, and the communication with the pleural surface was represented by an inflammatory tract which was apparently the result of collapse of the bronchus, caused by the empyema. Between the upper and middle lobes on the right there was an encapsulated collection of clear straw colored fluid amounting to about 30 cc. A staphylococcus albus and a non-hemolytic streptococcus were isolated from the pleural cavity.

The Need of a Balanced Mind.—To a psychiatrist the present troubled state of the world emphasizes more than ever before the need of a balanced mind in an unbalanced world; the need for confidence, for the use of intelligence, for the restraint of emotion. The need for sanity and for its application to the affairs of life has never been greater. —Winfred Overholser: The Broadening Horizons of Medicine, Science 90: 2338 (Oct. 20) 1939.

BULLETIN BOARD

PRESIDENT'S MESSAGE

Is There a Need For a Physicians' Relief Fund in The North Carolina Medical Society?

Among the complexities of our modern life, with its drain on our nervous, physical, and financial resources, is the ever increasing threat of a complete physical and mental breakdown, and a wreckage of our worldly possessions.

Many physicians of our rank have suffered this misfortune, and have had to spend days of dependency upon the bounty of either relatives or friends. At such a situation, our sense of propriety and pride in our profession is shocked. We share in the humiliation of our fellow physician who becomes virtually a community charge after having been an asset for so many years.

Many professions make provisions for the unfortunate ones in their ranks. It can be done either by an allocation of a relatively small part of the yearly dues of the society; by special yearly assessments; or, as is done by the North Carolina Dental Society, by the sale of an allotted number of Christmas seals each year to every individual in the society. Superannuated, invalid or disabled members in good standing with the society are recipients of help.

If the Medical Society of the State of North Carolina should see fit to have a Physicians' Relief Fund, I believe that a committee from an applicant's County Society should pass on the problem presented to them by himself, his relatives, or his friends. In turn the application should be passed on to a central committee and the custodian of the relief fund, be it a trust company, a bank, a life insurance company with an annuity department, or appropriate officers of the Society. Funds apportioned to individuals should be given on the basis of disability and financial circumstances, and the amount of money available. The grant should be renewed or withdrawn after investigation on a yearly basis.

With the membership of the Medical Society of the State of North Carolina standing in the thousands, a substantial fund could soon be built up. Thus another tie which binds us to each other in professional and fraternal relationship could be made a beautiful and enduring bond.

News Notes From the University of North Carolina

Dr. M. J. Rosenau has been asked by Mrs. Franklin D. Roosevelt to serve on a national advisory committee for community service projects. This committee was established to assist the Work Projects Administration in planning for a wider extension of the services of these projects nationally and to indicate new directions which projects should take in order to serve the largest possible number of persons in local communities. Dr. Rosenau will attend a meeting of the Committee in Nashville, Tennessee, on November 26, 27 and 28.

* * *

Dr. John William Roy Norton, Professor of Public Health Administration in the School of Public Health, has been called into the service and is located at Fort Bragg. Dr. Norton has been granted leave of absence for one year.

* * *

Dr. A. Watts Makepeace, who has been on the faculty of the University of Pennsylvania Medical School, has joined the staff of the School of Public Health of the University as Professor of Obstetrics. His work is in cooperation with the program of the State Board of Health and Duke University for postgraduate instruction of selected groups of physicians, which will be carried out at the University of North Carolina and at Duke.

* * *

Dr. D. F. Milam, Research Professor of Nutrition in the School of Public Health, attended the Southern Medical Association Meetings in Louisville. He presented a paper on "The Vitamin C Requirements of Man".

News Notes From Wake Forest College

At its meeting on November 20, the Board of Trustees of Wake Forest College made the following additions to the faculty of the Bowman Gray School of Medicine:

Professor of Radiology, James P. Rousseau, M.D., University of Maryland, 1918; F.A.C.P.; Certified by American Board of Radiology, 1934.

Associate Professor of Psychiatry, John A. Rose, M.D., University of Texas, 1933; Staff Physician Philadelphia Child Guidance Clinic, Lecturer in Department of Public Health; Instructor in Psychiatry, University of Pennsylvania Medical School, and Assistant Physician in the Out Patient Department, the Institute for Mental Hygiene of the Pennsylvania Hospital.

Associate Professor of Obstetrics and Gynecology, Frank R. Lock, M.D., Tulane University, 1935; Fellow in Obstetrics and Gynecology, Johns Hopkins Medical School, 1940.

Assistant Professor of Obstetrics and Gynecology, Nelson M. Webster, M.D., Duke University School of Medicine, 1937; Director, Forsyth County Clinics since 1939.

Carnegie Fellow in Genetics and Instructor in Medicine, C. N. Herndon, Jr., M.D., Jefferson Medical College, 1939.

Assistant Professor of Physiology and Pharmacology, James Maxwell Little, M.S., Emory University, 1933; Instructor in Biochemistry, Vanderbilt University Medical School since 1936.

Instructor in Surgery and Anatomy, Howard M. Starling, M.D., Medical College of Virginia, 1931; F.A.C.S.

Instructor in Surgery and Anatomy, James F. Marshall, M.D., University of Pennsylvania, .1931; F.A.C.S.

The Board of Trustees authorized the expenditure of $100,000 for equipment for the School of Medicine.

News Notes From the North Carolina Tuberculosis Association

Dr. P. P. McCain, the President of the National Tuberculosis Association and Superintendent of the North Carolina Sanatorium and Western North Carolina Sanatorium, sends the following message to all medical and lay groups interested in the prevention and cure of tuberculosis:

Preparation for the defense of our Country against those who would destroy our liberty and our democracy is rightfully engaging the attention of our whole Nation.

Let us remember that good health, both in our soldiers and in our civilian population, is one of the essentials of good National defense. Tuberculosis is one of the worst enemies of our National health. It undermines the health and destroys the lives not only of our soldiers, but of men, women and children in every walk of life. Every year 60,000 of our useful citizens die of this disease. Since 1921 34,177 soldiers of the World War have died as victims of this Great White Plague. Since 1917 tuberculosis in the soldiers of the World War has cost our Government $960,000,000.

Scientists have shown us that tuberculosis is preventable and curable. Before the disease can be brought under control, however, it is necessary to teach the masses of our people to take advantage of these preventive measures and it is necessary to provide the facilities for early diagnosis and treatment.

The necessary funds for these control measures have to be raised to a large extent by the sale of Christmas Seals. Everyone who buys liberally of Christmas Seals can have the double satisfaction of knowing that he is helping to control tuberculosis and also helping the cause of National defense.

* * *

Evelyn Love of Bennett College, Greensboro, was chosen as the winner of the seventh annual nationwide essay contest among Negro Colleges conducted by the National Tuberculosis Association. She had previously been awarded the first place in the state contest. Some 150,000 students over the nation submitted essays for the Negro College and High School Essay contests. The National award was a check for $50 and a gold medal.

* * *

Dr. P. P. McCain of Sanatorium, Dr. H. L. Seay of Huntersville, Dr. M. D. Bonner of Jamestown, and Frank W. Webster and Walter S. Page, Jr., of Winston-Salem, attended the meeting of the Southern Tuberculosis Conference at Monroe, La., on October 21-23. Dr. V. K. Hart of Charlotte addressed the conference on the subject of "Bronchoscopy in Tubercular Tracheobronchitis". This conference will be held in Asheville, N. C., in the fall of 1941.

News Notes From the State Board of Health

Of the 24,069 persons who died in North Carolina through September, this year, 3,449 were babies under a year old. During the corresponding period of 1939 there were 3,518 infant deaths—69 more than occurred this year. The total number of deaths during the first nine months of last year was 23,951, this number being 118 less than the 1940 toll.

Through September of this year, there were 60,537 births reported by the Division of Vital Statistics, 891 in excess of the 1939 figure for the same period, which was 59,646.

So far this year, according to figures already compiled, 70 North Carolina children have died from the preventable disease of diphtheria, as compared with 74 last year, while the pneumonia total dropped from 1,730 to 1,628.

Deaths from tetanus this year have numbered only 9, as compared with 22 for the corresponding period of 1939.

Homicides increased from 263 to 275, while suicides went from 220 to 226 during the periods compared.

There were 161 deaths in October from what the State Board of Health lists as preventable accidents, as compared with 131 in October, 1939. Aside from deaths due to automobile accidents, there were 15 accidental drownings, as compared with only 3 during the same period a year ago, while railroad accidents not associated with highway traffic took a toll of 7, against 4 a year ago. There were two air transportation fatalities this year, as compared with none for the corresponding period in 1939.

So far, for the entire year, the death toll in North Carolina from preventable accidents totals 1,196, out of 26,393 deaths from all causes. In other words, deaths from preventable accidents constitute more than four and a half per cent of deaths from all causes.

There was a sharp decline in the number of births reported in October, as compared with figures for the previous October. For the 1940 period there were 6,776 babies born in North Carolina, or 325 fewer than the 7,101 born in October, 1939. Deaths totaled 2,442, as compared with 2,523 a year ago, but the number of infants who died under a year old dropped from 388 to 362, a difference of 26 in favor of this year. This brought the infant mortality rate for the month down from 23.8 to 23.

There were no outstanding differences in the number of deaths from the various diseases reported. Pellagra claimed 18 fewer victims, diphtheria 11 fewer, cancer 8 more, while there were 5 fewer suicides and 4 more homicides.

* * *

In the November issue of **The Health Bulletin**, Dr. R. E. Fox, Director of the Division of County Health work, states that "At the present time seventy-nine of our one hundred counties have some type of local health service, either a single county unit or district health department. Six of the cities have health departments. These make local health service available to 3,166,395 of our 3,561,990 citizens.

"The average per capita expenditure for the fiscal year 1939-40 in county or district units was 53 cents, while in the city health departments the average was $1.13 per capita. The average for those counties and cities having full-time local health service was 58 cents per capita."

* * *

Dr. Walter E. Wilkins, Coordinator of the North Carolina School Health Service, has been appointed to membership on the governing council of the American School Health Association, for a term of three years. Notice of his appointment came from Dr. Amos L. Beaghler, of Denver, president of the Association.

Dr. Wilkins is the second North Carolinian to receive this honor. The first was Dr. S. B. McPheeters, health officer for Wayne County.

The North Carolina School Health Service represents two major State Departments, namely, the Department of Public Instruction and the State Board of Health. The cost is being supplemented by funds from two Rockefeller Boards—the Rockefeller Foundation and the General Education Board. The work in North Carolina was started July 1, 1939, and to date the staff has operated in five counties,

NEW HOSPITAL AT FORT BRAGG

The facilities at Fort Bragg are being rapidly expanded in connection with the National Defense Program. Fort Bragg is the largest army reservation in the United States and contains the largest field artillery range in the world. The reservation contains over 122,000 acres and includes parts of Cumberland and Hoke Counties. Plans are being made for the reception, quartering and training of at least 66,000 troops by June, 1941. Fort Bragg will then constitute the third largest community in North Carolina, its population being exceeded only by Charlotte and Winston-Salem.

As an important part of the building project, construction is under way for a cantonment hospital of 2000 beds. This hospital will cover an area 800 by 433 yards and will contain 112 buildings. These will be mainly of one story each, varying from 90 to 150 feet in length, the buildings being separated by a distance of 40 feet. They will include an administration building; a surgical operating building; eye, ear, nose and throat clinic; and various buildings for laboratory and x-ray. Commodious facilities for a physical therapy department have been provided and there will be a dental clinic with chairs for 15 operators. The staff will consist of approximately 72 medical officers, 240 nurses and 648 enlisted men, Medical Department. Quarters for the entire staff will be built in the hospital area. An ideal site has been selected in a central location at the highest point of Fort Bragg. Construction is proceeding rapidly and the entire project is expected to be completed by January 15, 1941.

In order to complete facilities needed for incoming increments of selective service men due to arrive by the spring of 1941, plans are being made for a second hospital to contain 1500 beds. Authorization for this project is expected shortly, upon receipt of which work will begin.

The climate and soil in the Sandhills District furnish an ideal environment for the housing and training of soldiers, and the sick rate at Fort Bragg is among the lowest of the Army. North Carolinians may well be proud of the part their state is taking in the National Defense Program.

SEABOARD MEDICAL ASSOCIATION

The Forty-Fifth Annual Meeting of the Seaboard Medical Association of Virginia and North Carolina was held at Washington, N. C., December 3, 4, and 5. Dr. John Cotten Tayloe is President of the Association.

At the first session of the Association, held on December 3, at 8 p. m., addresses were given by Dr. Oren Moore of Charlotte and Governor Clyde R. Hoey. The program for the rest of the meeting was as follows:

Wednesday, December 4—9 A. M.

"Benign Bronchial Adenomas"—Dr. Lamuel Mayo, Jr., Portsmouth.

"The Response of Intra-Thoracic Tumors to Irradiation"—Dr. Julian L. Rawls, Norfolk.

"Gastric Hemorrhage" — Dr. C. T. Smith, Rocky Mount, N. C.

"Mycotic Infection in Obstetrical and Gynecological Patients"—Dr. Bayard Carter, Durham, N. C.

"Hemorrhage in Labor"—Dr. C. J. Andrews, Norfolk, Va.

"The Maternal Pelvis in Relation to Labor"—Dr. Norris Vaux, Philadelphia, Pa.

"Cesarean Operation with Respect to Lower Segment Operation"—An analysis of 110 consecutive cases—Dr. Waverly R. Payne, Newport News, Va.

"Priapism"—Dr. Joshua Tayloe, Washington, N. C.

Wednesday, December 4—1:30 P. M.

"Physical Therapy as an Aid in the Treatment of Pneumonia"—Dr. Ben L. Boyenton, Norfolk, Va.

"Sulfathiazole in the Treatment of Staphylococcic Infection"—Dr. Walter B. Martin, Dr. R. B. Grinnan, Jr., Norfolk, Va.

"Asthma and Heart Disease"—Dr. Oscar Swineford, Jr., University of Virginia.

"The Non-Allergic Treatment of Asthma"—Dr. Warren T. Vaughan, Richmond, Va.

"Remarks Concerning Some of the Problems of Allergy"—Dr. Edward L. Alexander, Newport News, Va.

"Preparatory Treatment in Gall Bladder Surgery" —Dr. Russell Buxton, Newport News, Va.

"Acute Nephritis in Children"—Dr. Angus McBride, Durham, N. C.

Thursday, December 5—9:00 A. M.

"Adenomatous Goitre"—Dr. R. S. Anderson, Rocky Mount, N. C.

"Vitamins"—Dr. Ralph Fike, Wilson.

"Treatment of Bacillary Dysentery with the Sulfonamides"—Dr. Samuel Ravenel, Greensboro.

"The Role of Chronic Pyelonephritis in the Production of Hypertension"—Dr. William Nicholson, Durham.

"The Indwelling Nasal Tube"—A discussion of the advantages vs. the disadvantages of its use for prolonged gastric duodenal drainage — Dr. R. Duval Jones, Jr., Norfolk.

"Uretero-Placental Apoplexy"—Dr. James P. Hennessy, N. Y.

"Vaginal Ureteral Lithotomy" — Dr. D. J. Rose, Goldsboro.

"Carcinoma of the Colon"—Dr. Thomas Sparrow, Charlotte.

"Report of a Case of Acardia"—Dr. Ellis Winstead, Bellhaven.

"Intradermal Smallpox Vaccines" — Dr. Rachel D. Davis, Kinston.

"Acute Coronary Thrombosis"—Dr. Henry Temple, Kinston.

SEVENTH DISTRICT MEDICAL SOCIETY

The Seventh District Medical Society met at 2 p. m. on November 20 at Kannapolis. The following program was presented at the afternoon session:

"Gunshot Wounds of the Pregnant Uterus"—Dr. T. C. Bost, Charlotte, N. C.

"Traumatic Injuries of War and Peace"—Dr. A. M. Cornwall, Lincolnton, N. C.

"Blood Plasma in the Treatment of the Sick Child" —Dr. John Elliott, Salisbury, N. C.

Discussions by Dr. E. D. Andrews, Salisbury, N. C., and Dr. G. F. Busby, Kannapolis, N. C.

"Nephrosis"—Dr. Andrew Blair, Charlotte, N. C.

From 4 to 6 p. m., a Clinic was conducted by Dr. Frederic M. Hanes of the Department of Medicine, Duke University.

The banquet was held in Concord at the Hotel Concord at 7 p. m. The program was as follows:

Invocation—Dr. E. K. McLarty, Concord, N. C.

Address of Welcome—Dr. C. A. Cannon, Concord, N. C.

Response—Dr. E. B. Lattimore, Shelby, N. C.

Scientific Address—"Modern Concepts of Vitamin Therapy"—Dr. Frederic M. Hanes, Durham.

NORTH CAROLINA UROLOGICAL ASSOCIATION

The Fifteenth Annual Meeting of the North Carolina Urological Association was held at Sedgefield Inn, Greensboro, October 13 and 14. The scientific program was as follows:

Round Table Discussion, 8 p. m., October 13:
  Interesting cases were presented by Dr. Sidney Smith, Dr. Joshua Tayloe, Dr. N. O. Benson, and Dr. L. A. Andrews, and free discussion was held.

October 14, 2:30 p. m.:
  "History of North Carolina Urology"—Dr. John S. Rhodes, Raleigh.
  Symposium on the Treatment of Acute Renal Infections:
    1. Dr. A. I. Dodson, Guest Speaker, Richmond, Va.
    2. Dr. A. B. Peasley, Guest, Raleigh.
      Discussion by Dr. T. R. Huffines, Asheville, and Dr. Robert McKay, Charlotte.
  "Serial Pyelograms in Nephroptosis"—Dr. Aubrey Hawes, Charlotte.
    Discussion by Dr. Fred Patterson, Greensboro, and Dr. Fred Garvey, Winston-Salem.

Annual Dinner, October 14, 7 p. m.
  "The Adequate Treatment of Prostatic Disease from a Pathological Viewpoint" — Dr. Roy Henline, New York City, Guest Speaker.

At the business meeting, held at 5 p. m., October 14, Dr. Robert McKay was elected president; Dr. John W. Frazier, vice president; and Dr. W. C. Lott, secretary and treasurer. New members received into the association were Dr. John M. Harry, Fayetteville; Dr. Henry Harrill, Greensboro; Dr. Louis C. Roberts, Durham; Dr. John E. Dees, Durham; and Dr. Walter E. Daniel, Charlotte.

Officers of the Society for 1940 were Dr. P. G. Fox, president; Dr. John Rhodes, vice president; and Dr. John Frazier, secretary-treasurer.

BUNCOMBE COUNTY MEDICAL SOCIETY

The first monthly meeting of the Buncombe County Medical Society was held on November 4 at 8 p. m. Haywood Parker, L.L.D., spoke on "The Relationship Between the Medical and Legal Professions". On November 18 at 8 p. m. Dr. W. S. Justice spoke on "The Use and Abuse of Vitamin K".

FORSYTH COUNTY MEDICAL SOCIETY

At the monthly dinner meeting of the Forsyth County Medical Society, held on November 19, at the Robert E. Lee Hotel in Winston-Salem, a symposium on Low Back Pain was held. Dr. George W. Holmes spoke on back pain from the standpoint of the orthopedic surgeon; Dr. Fred K. Garvey, from the genito-urinary viewpoint, and Dr. L. C. Ogburn, from the gynecological standpoint. Open discussion was led by Drs. R. A. Moore, H. M. Starling, C. S. Drummond, and B. F. Martin.

MECKLENBURG COUNTY MEDICAL SOCIETY

At its first monthly meeting, held on November 5, the Mecklenburg County Medical Society heard two guest speakers. Dr. John S. McKee, Jr., of the Staff of the State Hospital at Morganton, spoke on "The Role of Trauma in Mental Illness", with discussion of two recent cases at the State Hospital. Dr. F. Webb Griffith addressed the society on "Medical Preparedness". On November 19 the Society held a joint meeting with the North Carolina Pathological Society. A paper on "Benign and Malignant Breast Tumors" was given by Dr. Charles F. Geschickter of Baltimore.

EXAMINATION
AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY

The written examination and review of case histories (Part I) for Group B candidates will be held in the various cities of the United States and Canada on Saturday, January 4, 1941, at 2:00 p. m. Formal notice of the place of examination will be sent each candidate several weeks in advance of the examination date. No candidate will be admitted to examination whose examination fee has not been paid at the Secretary's Office. Candidates who successfully complete the Part I examination proceed automatically to the Part II examination to be held in June 1941.

The general oral and pathological examinations (Part II) for all candidates (Groups A and B) will be conducted by the entire Board, meeting at Cleveland, Ohio, from May 28 to June 1, 1941, immediately prior to the opening of the annual meeting of the American Medical Association.

Application for admission to Group A, (Part II) examinations must be on file in the Secretary's Office not later than March 15, 1941.

After March 1, 1942, there will be only one classification of candidates, and all will be required to take the Part I and Part II examinations.

The Board wishes to announce a modification of the case record ruling (effective January 1, 1942) as it appears in the September 1940 issue of the Board booklet. This ruling should read: "It is preferable that the number of residency cases submitted should not be more than half (25) of the total number of fifty (50) cases required."

For further information and application blanks, address Dr. Paul Titus, Secretary, 1015 Highland Building, Pittsburg (6), Pennsylvania.

REWARD FOR PAPER ON VASCULAR HYPERTENSION

The Van Patten Pharmaceutical Company of Chicago will award a first prize of $1,000 for the best paper on Vascular Hypertension published in a recognized American medical journal, during the first six months of 1941. Any article on the subject written by an American physician will be eligible for prize award. In addition, $500 will be awarded to the authors of other papers to be selected in accordance with the terms here set forth: Second prize, $250; third prize, $100; fourth prize, $50; 10 honorable mention awards of $10 each.

Prize money will be awarded on the basis of votes cast by American physicians. Announcement of this offer is being mailed to every physician in the United States, and at the close of the contest a list of articles published on this subject will be mailed to every physician, and he will be invited to cast his ballot for the article he deems best.

NEWS NOTES

Dr. Hugh Parks of Elkin died on November 14 in the Hugh Chatham Memorial Hospital at Elkin.

* * *

Dr. Oren Moore of Charlotte has been elected to membership in the American Association of Obstetricians, Gynecologists, and Abdominal Surgeons.

* * *

Dr. William Reid Pitts has opened an office in Charlotte in the Medical Arts Building for the practice of surgery and neurosurgery.

The following North Carolina doctors were registered at the meeting of the Southern Medical Association in Louisville:

Baker, Lenox D., Durham.
Bell, George Erick, Wilson.
Bridger, Dewey H., Bladenboro.
Brownsberger, John F., Fletcher.
Cobb, Donnell B., Goldsboro.
Cocke, Charles H., Asheville.
Cooper, Geo. M., Raleigh.
Crispell, Raymond S., Durham.
Dees, John E., Durham.
Dees, Susan Coons, Durham.
Elias, Lewis W., Asheville.
Fearing, Isaiah, Elizabeth City.
Fetzer, Paul W., Reidsville.
Forbus, W. D., Durham.
Griffin, William R., Asheville.
Hamblen, E. C., Durham.
Hansen-Pruss, O. C., Durham.
Hege, J. Roy, Winston-Salem.
Hitch, Jos. Martin, Raleigh.
Holmes, Geo. W., Winston-Salem.
Jacobs, J. E., Charlotte.
Johnson, Lawrence C., Durham.
Johnson, W. R., Asheville.
Jones, Randolph R., Jr., Durham.
Kemp, Malcolm D., Pinebluff.
Kornegay, L. W., Rocky Mount.
Martin, Donald S., Durham
McKay, Hamilton W., Charlotte.
McNairy, Caroline, Lenoir.
Milam, D. F., Chapel Hill.
Miller, R. C., Gastonia.
Moore, Oren, Charlotte.
Nicholson, Wm. McNeal, Durham.
Pipes, David M., Greensboro.
Pittman, Malory A., Wilson.
Proctor, Ivan M., Jr., Raleigh.
Ravenel, S. F., Greensboro.
Reynolds, Carl V., Raleigh.
Ringer, Paul H., Asheville.
Robinson, W. J., Matthews.
Ruffin, Julian M., Durham.
Sidbury, J. Buren, Wilmington.
Swann, C. C., Asheville.
Wallace, Wm. Stuart, Durham.
Watson, T. M., Greenville.
Whisnant, A. M., Charlotte.
White, R. A., Asheville.

Vitamin-Free Foods For Research!

A recent announcement by the Research Laboratories of the S.M.A. Corporation reveals that they are now in a position to provide vitamin-free casein and other vitamin-free foods for experimental purposes to researchers who have previously been obliged to manufacture these items for private use.

For many years the S.M.A. Corporation has been producing these foods exclusively for use in their laboratories. Now, with the expansion of their own facilities and the realization of the convenience to others engaged in laboratory work this offer is made to provide vitamin-free diets at an exceptionally reasonable cost. Quantities of one, five, ten or 100 pounds or more may be ordered directly from the Research Laboratories, S.M.A. Corporation, Chagrin Falls, Ohio.

WOMAN'S AUXILIARY

NOTICE TO COUNCILLORS

Dr. C. F. Strosnider, a member of our Advisory Board has made the following suggestions:

First, that you push your membership throughout the State—especially in the eastern part of North Carolina—this fall, for the reason that conditions are better now than they will be next spring.

Second, that the Auxiliary support the preparedness program in every way possible. The young doctors within the draft age should volunteer without delay in order that the boys who are being drafted into the service may have competent medical care.

Third, that good organization work in the Auxiliary is laying the foundation for a national service in the immediate future; and I would stress this last suggestion upon your membership chairman. For surely there is a national emergency developing, and our co-workers will find abundant opportunity to serve their state and country during this period of preparedness.

Craven County Auxiliary

The Craven County Auxiliary held its annual meeting at the home of Mrs. C. S. Barker in New Bern on November 7. Mrs. Barker was elected president of the Auxiliary, succeeding Mrs. R. S. McGeachy, and Mrs. Oscar A. Kafer was made secretary and treasurer. During the business meeting Mrs. McGeachy discussed organization of auxiliaries and endowment funds. Following the business session refreshments were served in the dining room.

Minutes of the Executive Board Fall Meeting

The Fall Meeting of the Executive Board of the Auxiliary to the Medical Society of the State of North Carolina was held on October 23, at 1 p. m., in the Sir Walter Raleigh Hotel in Raleigh, with eighteen members present. Mrs. Clyde R. Hedrick presided. The invocation was given by Mrs. Isaac H. Manning.

The president extended warm greetings to those present, asking that she have the hearty cooperation of all in extending the service of our organization. Mrs. Hedrick announced the following resignations from the Board: Mrs. F. M. Hauser, second vice president; Mrs. Paul Yoder, Historian; and Mesdames John Winstead, H. D. Walker, M. A. Pittman, Ben Lawrence, Councillors. These resignations were accepted with regret. Mrs. Hedrick has appointed Mrs. J. H. McNeill as second vice president and Mrs. Roy Hege as historian. Mrs. R. S. McGeachy and Mrs. K. B. Pace volunteered to aid in securing a Councillor for the second district; Mrs. C. F. Strosnider, for the fourth; and Mrs. Ben Lawrence and Mrs. Sidney Smith for the sixth.

The reports of the officers were then given, which reports are filed in the secretary's book for use as reference. Mrs. C. F. Strosnider, first vice president, asked officers and Councillors to report to her on their organizations in order that she may have a report for the S. M. A. in November. The Chairmen of Standing Committees gave interesting reports of their work. Mrs. T. S. Lee, Program Chairman, displayed posters and distributed booklets which she secured from the American Medical Association. Mrs. Frederick Taylor suggested that we put the material in the hands of the Junior Red Cross to be used in school programs. Mrs. W. M. Johnson urged that we be more zealous in the dissemination of knowledge concerning the medical profession. Mrs. R. S. McGeachy requested anyone who has material or suggestions relevant to her Research Report to communicate with her.

Mrs. Frederick R. Taylor, Chairman of the Jane Todd Crawford Memorial Fund, asked that she be allowed to take a collection for this fund at the annual State Meeting of the Auxiliary, with the understanding that anything over five dollars be kept in our State Loan Fund and Bed Fund. Mrs. Ben Lawrence made the motion that this request be granted and Mrs. T. S. Lee seconded it. The motion was carried.

Mrs. Hedrick presented Mrs. Ben Kendall, recently appointed Bulletin Chairman. Mrs. Kendall announced that she would be glad to take the subscription of anyone for the Bulletin, the price being $1.00 per year. Mrs. Kendall also presented a report on the A. M. A. meeting, which she attended in New York City June 10-14.

Next was the report of Mrs. E. C. Judd, treasurer. A summary of the report follows: Amount in the General Expense Fund $163.13; amount in upkeep of Bed Fund $391.12; amount in Student Loan Fund $557.52; amount in McCain Endowment Fund $1,761.81. The report was accepted.

Mrs. Ben Lawrence and Mrs. W. P. Knight, Councillors, gave interesting reports. These reports are filed. Mrs. Alfred A. Kent, Jr., next made the report for the committee appointed to name the bed at Western Sanatorium. The Committee recommended that the bed be named in "memory of the late Dr. Martin L. Stevens, who served the medical profession so faithfully and so well." Mrs. Kent moved the acceptance of this report, seconded by Mrs. W. P. Knight. After a lengthy discussion it was decided to vote by ballot. The ballots cast showed thirteen in favor of acceptance and five against. The motion was accepted.

Mrs. W. P. Knight made a motion that the president appoint the delegate to the S. M. A. Mrs. J. S. Hooker seconded the motion, and it was carried.

It was announced that Mrs. P. P. McCain had been appointed chairman of the committee to arrange the program for the State meeting of the Auxiliary. Mrs. C. F. Strosnider moved, seconded by Mrs. Sidney Smith, that the president appoint a committee to confer with the entertaining Auxiliaries as to how they might be assisted in their entertaining. The motion was carried.

Mrs. Hedrick then appointed Mrs. W. P. Knight as chairman of the nominating committee to secure officers for the ensuing year. The other members, nominated from the floor, are Mrs. J. B. Sidbury, Mrs. C. F. Strosnider, Mrs. A. S. Ormand, and Mrs. Alfred A. Kent, Jr.

Mrs. Hedrick offered a five dollar prize to the District having the largest percentage of paid-up members by May 1.

In conclusion the president graciously invited the Executive Board to meet at her home in the spring.

Respectfully submitted,
LIDIE P. FREEMAN,
Recording Secretary.

In Memoriam

JOHN PETER MUNROE, M.D.

1857 - 1940

"Single-handedly he did more to advance medicine in North Carolina than any other one man I know." (Dr. William Allan.)

On March 29, 1857 was born the man whose long and useful life has been revered countless times by such eulogies as that quoted in the opening paragraph of this note, also written in his memory.

The Mecklenburg County Medical Society humbly bows in tribute to the memory of Dr. J. P. Munroe, a great scholar, a dynamic teacher, a thorough diagnostician, and a pre-eminent physician.

Dr. Munroe, an exceptionally well educated man, acted as president of and instructor in the North Carolina Medical College. To even mention all of the honors this great man earned during his 83 years of service on this earth would require a great deal of space. He was awarded the degrees of LL.D. by Davidson College and D. Sc. by Duke University. He was a member of many organizations operating for the advancement of medicine and led not a few such movements. Throughout his life, Dr. Munroe's ability was recognized by his fellow citizens and used by his community. His vision was broad, his interests were wide and he was a friend of man.—From the **Bulletin** of the Mecklenburg County Medical Society.

FREDERICK D. AUSTIN, M.D.

1886 - 1940

After a prolonged illness, Fred Austin died on October 14th at the Mercy Hospital. For thirty-three years, Fred Austin had practiced medicine and served in various civic capacities in Charlotte. Many of his years in medical practice had been in association with his brother, Dewitt Austin. He was graduated from the North Carolina Medical College in 1907 and since this time has played a conspicuous role in Charlotte medicine. During recent years he had served his community as coroner of Mecklenburg County and held the Democratic nomination for a third term in the November election. His services in this position were outstanding.

Fred Austin had a host of friends which naturally resulted from his genial personality.

He is survived by his wife, formerly Miss Ida Williams, two sons and two daughters. One son, Fred Austin, Jr., returned to Charlotte, after an excellent training, only one year ago to be associated with his father in medicine. He has also succeeded him in the office of coroner.—From the **Bulletin** of the Mecklenburg County Medical Society.

JOSEPH LAWRENCE ADAMS, M.D.

When failing health in the prime of his career removed Joseph Lawrence Adams from the active list, our Buncombe County Medical Society suffered the loss of a skilled and fearless surgeon, who filled a peculiar niche in its activities and now that death has made final this separation, we can sense the gravity of the bereavement. We can also see more clearly the place he filled, for there was no other one of his generation among us so closely associated with our immediate section, since childhood, who took to surgery.

To rightly estimate the depth of his loss we must go to the neighborhood where his youth was spent, and it is seldom that one sees so clearly the reversal of the saying about the prophet and his own country. Born in Asheville and reared here and at the nearby country home of his parents, Dr. Adams was a man of the plain people, particularly of those amongst whom he was reared. While his practice spread far and wide we feel that his heart was across the river with his early associates. His habits and his pastimes indicated that he could never dissociate himself from the country.

But for the time of his army service in the World War and other short absences from home it was his almost daily habit to spend a short time in the country. We know that to many, many people over there, the plain people, his passing was indeed a bereavement.

THEREFORE; recognizing the futility of trying to outline the character and achievements built up in the course of his wide activities, we, his friends, simply chronicle this tribute to his warm heart and his human personality, and RESOLVE that it be spread upon a page of our minutes; that it be printed in our Bulletin, and that a copy be sent to his family.

Lewis W. Griffith,
Joseph T. Sullivan,
Gaillard S. Tennent,
Committee.

—From the Bulletin of the Buncombe County Medical Society.

BOOK REVIEWS

Taber's Cyclopedic Medical Dictionary Including a Digest of Medical Subjects: Medicine, Surgery, Nursing, Dietetics, Physical Therapy. By Clarence Wilbur Taber and 14 Associates. 1488 pages with 273 illustrations; Philadelphia: F. A. Davis Company, 1940. Cloth, Thumb-indexed $3.00, Plain $2.50.

This is the only medical dictionary, large or small, written (not compiled) by a corps of medical specialists. This work is as much a dictionary of medical subjects as it is a comprehensive medical lexicon. With its 50,000 words, including the latest terms and drugs, this work will answer the requirements of all professional groups concerned with all branches of medicine. An evidence that it is up to date is the inclusion of the latest members of the sulfonamide group, sulfapyridine and sulfathiazole, with indications, dosage, and precautions to be taken in their use. The illustrations are good.

Office Urology. By P. S. Pelouze, M.D., Assistant Professor of Urology, University of Pennsylvania; Special Consultant to United States Public Health Service, etc. 766 pages with 443 illustrations, 19 in color. Philadelphia: W. B. Saunders Company, 1940. Price, $8.00.

The author has again in his very interesting style produced a much needed and entirely new type of contribution to urology. This volume even surpasses his monograph, "Gonococcal Urethritis in the Male," written in 1928 in which he simplified and coordinated the many facts concerning gonorrhea in a manner which is almost unique. The reception accorded him in this past work, and the fact that the author does no surgery, well qualifies him to produce, in his honest and simple way, a volume on office urology. He has not failed in this task.

This work should be of particular value to the beginner and help him to avoid many of the pitfalls incident to the first few years of practice. It should help the general practitioner, who of necessity does some office urology, to do properly the things within his scope, and should acquaint him with his limitations and lead him to an earlier recognition of urological conditions which belong to a competent urologist.

There are a few phases of this work which are outstanding. One example is the stressing of the relations of anatomic structure and surface histology to urogenital infections. He explains the perpetuation of infection by lack of drainage and an improper understanding of the different degrees of epithelial susceptibility to infection. The chapter on the handling of the sexual problem is a masterpiece and should alone be worth the price of the entire volume. It debunks the mass of absurdities about numerous apparent departures from the normal. It differentiates the psychologic from the pathologic background in the various neuroses and should aid in treating such cases. Urinary antiseptics are given a thorough discussion, though a warning is issued about the danger of depending too much upon them to the exclusion of proper diagnosis of the underlying pathology. Focal infective prostatitis is particularly stressed as a factor and given its proper place with teeth and tonsils as a focus of infection. It is also absolved from any relationship to gonorrhea.

The volume on Office Urology is written in a convincing and honest manner. The humane side of the practice of medicine is not forgotten. For a treatise on urology with which to improve the handling of office patients this work by Dr. Pelouze can be heartily recommended.

The School-Child's Breakfast

Many a child is scolded for dullness when he should be treated for undernourishment. In hundreds of homes a "continental" breakfast of a roll and coffee is the rule. If, day after day, a child breaks the night's fast of twelve hours on this scant fare, small wonder that he is listless, nervous, or stupid at school. A happy solution to the problem is Pablum (Mead's Cereal cooked and dried). Six times richer than fluid milk in calcium, ten times higher than spinach in iron, containing vitamins B_1 and G, Pablum furnishes protective factors especially needed by the school-child. The ease with which Pablum can be prepared enlists the mother's co-operation in serving a nutritious breakfast. This palatable cereal requires no further cooking and can be prepared simply by adding milk or water of any desired temperature.

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